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AIRWORTHINESS AND FLIGHT CHARACTERISTICS EVALUATION OF THE MCDONNELL DOUGLAS HELICOPTER CORPORATION (MDHC) 530FF HELICOPTER

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An Airworthiness and Flight Characteristics Evaluation of the McDonnell Douglas 530FF helicopter (also known as the AH-6G or MH-6H) was performed by the U.S. Army Aviation Engineering Flight Activity between August 1987 and September 1988. The test consumed 94 productive flight test hours in 152 total hours. Many configurations were flown at gross weights up to 3950 pounds. Three deficiencies related to the handling qualities, and one related to the inability to observe a sideslip/tail rotor flapping limit were identified. Twelve shortcomings were also identified.

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INTRODUCTION

BACKGROUND

1. The U.S. Army has identified a need to replace the powertrain of the existing AH-6F and E/MH-6E aircraft with the powertrain of the McDonnell Douglas Helicopter Company (MDHC) 530FF. This conversion maintains the existing H500D airframe but increases the length of the main and tail rotor blades, which requires an extended tail boom. The Allison Model 250-C20B engine is replaced with the Allison Model 250-C30. The converted aircraft is redesignated the AH-6G or the MH-6H depending upon external stores configuration. Prior to U.S. Army Aviation Engineering Flight Activity (AEFA) testing, the MDHC conducted initial performance, handling qualities, autorotation, structural loads, and firing tests to a maximum gross weight of 3950 lb. The U.S. Army Aviation Systems Command (AVSCOM) tasked AEFA to conduct an Airworthiness and Flight Characteristics (A&FC) evaluation on a AH-6G/MH-6H configured helicopter (ref 1, app A) and a test plan was prepared (ref 2).

TEST OBJECTIVE

2. The objective of this evaluation was to evaluate the handling qualities and performance characteristics of the AH-6G/MH-6H configured helicopter; providing a basis for AVSCOM to issue an airworthiness release (AWR) and data for the operator's manual.

DESCRIPTION

3. The test helicopter, US Army S/N 84-24319, was a highly modified H500D aircraft as manufactured by MDHC. The powertrain of the H500D was replaced by the manufacturer with the powertrain of the MDHC 530FF. This conversion included 6 inch longer main rotor blades and one inch longer tail rotor blades and required an 8 inch tailboom extension. The existing engine was replaced with the Allison Model 250-C30 engine with an uninstalled rating of 650 shaft horsepower (shp) at sea level standard conditions. The transmission remained the same and was limited to 425 shp.

4. The AH-6G/MH-6H had a single five-bladed, fully articulated, main rotor and a single two-bladed, delta-hinged, semi-rigid teetering-type tail rotor. The cockpit was a side by side arrangement with conventional flight controls at each station. The flight controls were unboosted and without augmentation. The landing gear incorporated oleo strut skid-type gear. A detailed description of the airframe is contained in the MDHC 500D Service Training Manual (ref 3) and a description of the powertrain is contained in the MDHC 530F Plus Service Training Manual (ref 4). A description of the aircraft and various external configurations are presented in appendix B with classified configurations in appendix F.

TEST SCOPE

5. Testing was conducted to evaluate performance and handling qualities of the test aircraft in various external configurations. The attack version (AH-6G) utilizes a variety of

weapons systems that are either hard mounted to the cargo floor, attached to a universal mount or are attached to the four station mounting ordnance platform (plank). The utility version (MH-6H) was configured with either the EPS, the low rider or the configuration 2 equipment. Since one aircraft was utilized to evaluate both versions, the test aircraft for the remainder of this report will be referred to as the AH-6G.

6. The majority of the flight test program was conducted at Edwards Air Force Base, (field elevation 2302 ft), with additional testing conducted at Bishop (4120 ft elevation) and Bakersfield (488 ft elevation), California between 19 August 1987 and 21 September 1988. Test conditions are shown in tables 1 and 2. A&FC testing totaled 152 flight hours of which 94 were productive. Hover performance tests were authorized for combined weight and cable loads up to 4000 lb. The maximum gross weight for all other tests was 3950 lb provided all weight above 3200 lb was jettisonable. Tests were conducted at mid longitudinal center of gravity (cg) positions. Flights were conducted with doors off except for one level flight performance test. Flight restrictions and operating limitations contained in the Pilot's Flight Manual for the MDHC 530F Plus (ref 5) and the airworthiness release (ref 6) were observed. Due to various revisions of the airworthiness release throughout the test, the original engine torque pressure limit of 61 psi was changed to 59 psi and all performance tests are based on this limit.

TEST METHODOLOGY

7. Flight test techniques used are described in references 7 and 8. Handling qualities were evaluated using MIL-H-8501A (ref 9) as a guide. Flight test data were recorded on magnetic tape using an onboard instrumentation package (app C). Test and data analysis methods are briefly described in appendix D. Performance testing was conducted in zero-sideslip, while flying qualities testing was conducted ball-centered. In some configurations, ball-centered trim was uncomfortable and therefore trim was established at the condition an operational pilot would most likely have flown the aircraft. Handling qualities ratings were assigned in accordance with a Handling Qualities Rating Scale (HQRS) (fig. D-5). Vibration ratings were assigned utilizing a Vibration Rating Scale (VRS) (fig. D-6). Control system rigging check and aircraft weight and balance were performed by AEFA personnel prior to testing. An engine torque system calibration was performed in an engine test cell prior to testing.

Table 1. Performance Test Conditions

Test	Gross Weight (lb)	True Airspeed (knots)	Density Altitude (feet)	Configuration[1]
Hover[2]	to 4000[3]	0	-200 to 6800	EPS Empty
			4600	EPS Full
			3900	Plank with two M-261 rocket launchers
Level Flight	2740 to 3860	31 to 118	1600 to 10,000	23 configurations (see appendix E and table 3
Takeoff	3310 to 3910	45 to 74	2000	EPS Empty
Descent	2930 to 3730	48 to 94 KCAS[4]	5500	

NOTES:

[1]All tests performed at mid center of gravity and with doors off except for one level flight performance flight with doors on.
[2]Hover tests performed at skid heights, of 2, 6, and 75 feet.
[3]Combined aircraft weight and cable tension.
[4]KCAS: Knots calibrated airspeed.

Table 2. Handling Qualities Test Conditions[1]

Test	Average Gross Weight (lb)	Averge Density Altitude (ft)	Average Trim Calibrated Airspeed (kt)	Configuration[2]	Remarks
Control Positions in Trimmed Foward Flight	2700 to 3900	6000 to 10,000	30 to 110	EPS Empty	In conjunction with performance tests at zero sideslip
Static Longitudinal Stability	2800 to 3900	6500	64 64, 83, 100[3],	EPS empty, EPS full, plank with two M261[4], Univ. mount with two M261	TOP[5] climb, and 1000 fpm rate of descent Level flight
Static Lateral-Directional Stability	2800 to 3900	6900	64 64, 84, 99[3]	EPS empty, EPS full, plank with two M261, Univ. mount with two M261 asymm[6] Config. 2 asymm[5]	TOP climb an 1000 fpm descent Level flight
Maneuvering Stability	2800 to 3800	7000	64, 84, 102[3]	EPS empty, EPS full, Plank with two M261, Univ. mount with two M261	Left/right wind up turns. Pull-ups and pushovers
Dynamic Stability	3000 to 3800	6900	65 65, 85	EPS empty, Univ. mount with two M261	TOP climb and 1000 fpm descent Level flight
Controllability	2800 to 3800	2300[7] 6600	0 65, 85, 103[3]	Univ. mount with two M261 Univ. mount with two M261 EPS empty, plank with two M261	Directional and lateral only. Up to 2.0 inches maximum. 50 foot skid height. Lateral and longitudinal only. Up to 2.0 inches maximum.
Slope Landings	2800 to 3500	2300[7]	0	Univ. mount with two M261, Univ. mount with two M261 asymm[7]	Slopes up to 10 degrees nose up and nose down, and 15 degrees left and right.
Low-Speed Flight	2900 to 3300	2300[7]	0 to 30 KTAS[9]	EPS empty, Univ. mount with two M261, Asymm. config 2[7]	0° to 360° in 45° increments. 10 ft skid height.
Mission Maneuvers	2700 to 3800	2300 to 3300	0 - 130	EPS empty, Univ. mount with two M261	Low level flight, running fire, returns to target, accelerations, NOE decelerations
Simulated Engine Failures	3100 to 3800	6500	65 65, 95	EPS empty, Univ. mount with two M261	TOP climb Level flight
Autorotational Landings	2700 to 3200	2300[7]	65	EPS empty	Flare pitch attitude varied to minimize ground run.
Vibration Survey	2900 to 3800	5000	65 30 to 115	Plank empty, Plank with with 2 50 cal, Plank with 50 cal and M260[10], Plank with two M261	Left and right level turns Level flight

NOTES:

[1]Tests conducted with doors off, mid longitudinal cg, mid lateral cg and at ball-centered trim unless otherwise noted. All external stores were symmetrically loaded unless otherwise noted.

[2]A detailed configuation description is presented in table 3 and appendixes B and F.

[3]Some configurations were tested at lower trim airspeeds due to airspeed or power restrictions (ref A-6).

[4]M261 19-shot rocket launcher.

[5]Takeoff power, 59 psi torque pressure (30 min. limit).

[6]B L 4.0 (rt) lateral cg.

[7]Test site elevation

[8]B L -4.0 (lt) lateral cg.

[9]KTAS: Knots true airspeed.

[10]M260 7-shot rocket launcher.

RESULTS AND DISCUSSION

GENERAL

8. The performance and handling qualities of the AH-6G helicopter were evaluated with various external configurations at test sites from field elevations of 488 ft to 4120 ft. The aircraft did not have out of ground (OGE) hover capability above 3643 lb at sea level standard conditions and at the maximum gross weight of 3950 lb could not hover OGE under any atmospheric conditions. Two deficiencies relating to low speed handling qualities were identified: the large, sharp and rapid yaw excursions of 5 to 10 deg in left sideward flight from 10 to 30 knots true airspeed (KTAS); and the excessive uncommanded pitch, roll and yaw oscillations with left quartering tailwinds in excess of 15 knots. The overall handling qualities during mission tasks were significantly degraded at gross weights above 3500 lb due to pitch instability at high load factors, control feedback forces, and rotor speed droop. Two shortcomings associated with dynamic stability were identified. One was an easily excited neutral to lightly damped lateral-directional oscillation, and the other was an easily excited, divergent, long term pitch oscillation. Ten other shortcomings were identified.

PERFORMANCE

Hover Performance

9. The hover performance capability was evaluated by determining the engine power required to hover at skid heights in ground effect (IGE) at 2 and 6 ft, and OGE at 75 ft. Testing was accomplished using the tethered hover method. Hover performance at all skid heights was evaluated in three configurations: EPS empty, EPS full, and with one M261 19-shot rocket launcher installed on each side of the plank. The OGE hover ceiling summary at takeoff power is presented in figure E-1, appendix E for the EPS empty configuration. At standard atmospheric conditions and pressure altitudes below 12,600 ft, 30-minute power available is limited by the transmission torque limit of 59 psi (425 shp). OGE Hover at sea level standard conditions is limited to 3643 lb, and 3364 lb (extrapolated) at 4000 ft pressure altitude and 35 deg C. Under no circumstances can the aircraft hover OGE at the maximum mission gross weight of 3950 lb. At sea level standard conditions, the aircraft can hover at a 6 ft skid height to 3930 lb. The aircraft can hover at a 2 ft skid height at the maximum gross weight to an altitude of 4500 ft, standard atmosphere. Nondimensional hover performance for the three configurations tested is presented in figure E-2 through E-4. As compared to the EPS empty configuration, OGE hover power requirements were increased by 2.7% with the EPS full and by 1.7% with the M261 19 shot rocket launchers mounted on the plank.

Takeoff Performance

10. Takeoff performance tests were conducted to determine the distance required to clear a 50 ft obstacle. Level accelerations from a stabilized 2 ft hover were initiated by simultaneous application of forward cyclic and increasing collective to obtain maximum takeoff power (59 psi torque). After initial control application was made by the pilot to start the accelerations, the desired power setting was maintained by the copilot. This allowed the pilot to concentrate on controlling the aircraft attitude and flight path and resulted in

reduced pilot workload during maximum performance takeoffs. Three knots prior to the target airspeed, aft cyclic was applied to allow the aircraft to climb-out at the target airspeed to a height of 50 ft.

11. The aircraft was evaluated with EPS empty at four gross weights between 3310 and 3910 lb. The data are shown in figures E-5 and E-6. Due to the inaccuracies of the aircraft's airspeed indicating system at low speeds, the minimum climbout airspeed tested was 35 knots indicated airspeed (KIAS) (ship's system). The trends in the data indicate that greater performance would have been achieved had a lower airspeed been tested. The two lighter weights were within the OGE hover capability of the aircraft thereby allowing the clearance of a 50 ft obstacle in zero feet at zero forward airspeed.

Level Flight Performance

12. Level flight performance tests were conducted to determine power required and fuel flow as a function of airspeed, gross weight, and density altitude. A constant thrust coefficient (C_T) was achieved by maintaining a constant main rotor speed of 477 rpm (100%) and increasing density altitude as fuel was burned. Data were obtained in stabilized zero-sideslip level flight (except in fig. E-43) at incremental airspeeds ranging from approximately 30 KIAS to the maximum airspeed attainable. Twenty-three configurations were tested as presented in table 3. The aircraft was limited by the airworthiness release to a nonjettisonable gross weight of 3200 lb. To obtain gross weights above that limit, an external ballast box was mounted underneath the aircraft attached to the cargo hook (fig. B-19). The change in equivalent drag area (ΔF_e) caused by the ballast box was determined to be 3.0 square feet. All level flight performance data presented have been corrected for the drag of the ballast box. Nondimensional level flight performance plots for the baseline EPS empty configuration are shown in figures E-7 and E-8. Dimensional data for EPS empty and all other configurations follow in figures E-9 through E-43. The curves through the data were generated by adding the annotated ΔF_e determined for each configuration to the curves for EPS empty. A summary of the ΔF_e values for each configuration are shown in table 3. It should be noted that these are net values which may consist of the combined effect of aerodynamic drag, loss of tail rotor efficiency, etc. In order to provide some perspective of what changes in effective drag area mean, the following examples are given at sea level standard conditions: 1 sq ft is equivalent to 10.39 shp at 100 knots, 5.32 shp at 80 knots, or 2.24 shp at 60 knots.

13. The never exceed airspeed limits (V_{NE}) imposed by the airworthiness release were such that maximum endurance (bucket) airspeeds and/or maximum range airspeeds were never attained during several heavy weight high altitude tests (fig. E-11 through E-13, E-16, E-18, etc.). At 3950 lb, V_{NE} varies from 54 knots calibrated airspeed (KCAS) at 8000 ft density altitude to 90 KCAS at 4300 ft and below. The V_{NE} limits which prevents the attainment of maximum endurance or range airspeeds could adversely affect the mission due to excessive fuel consumption and subsequently the downloading of stores and equipment in favor of additional fuel. The airworthiness restrictions reportedly were based on the onset of blade stall and subsequent aircraft pitching moments.

Table 3. Summary of AH-6G Level Flight Performance Drag Comparison

Figure	Configuration[1]		Change in Equivalent Drag Area ΔF_e (ft^2)
	Left	Right	
E-9 - E-13	EPS Empty	EPS Empty	Baseline
E-14 - E-16	Clean	Clean	-1.8
E-17 - E-18	EPS Empty (Doors On)	EPS Empty (Doors On)	-2.75
E-19 - E-20	XM-8 40mm grenade launcher (simulated)	M260 7-shot rocket launcher with HG517 mount	0
E-21 - E-23	EPS Full	EPS Full	16.5
E-24	Configuration #2	Configuration #2	19.0
E-25	EPS Empty (floats on skids)	EPS Empty (floats on skids)	1.7
E-26 - E-27	Universal mount with HMP	Universal mount with HMP	8.0
E-28	XM-8 40mm grenade launcher (simulated)	Universal mount with M260 7-shot rocket launcher	3.5
E-29	Universal mount with M261 19-shot rocket launcher	Universal mount with M261 19-shot rocket launcher	7.5
E-30	Universal mount with HMP	Universal mount with M260 7-shot rocket launcher	7.0
E-31	Universal mount with HMP	Universal mount with M261 19-shot rocket launcher	8.0
E-32	XM-8 40mm grenade launcher (simulated)	Universal mount with HMP	5.5
E-33	XM-8 40mm grenade launcher (simulated)	Universal mount with M261 19-shot rocket launcher	5.5
E-34	M134 minigun (simulated)	Universal mount with HMP	5.0
E-35	Universal mount with M260 7-shot rocket launcher (full)	Universal mount with M260 7-shot rocket launcher (full)	6.0
E-36	Universal mount with M260 7-shot rocket launcher (empty)	Universal mount with M260 7-shot rocket launcher (empty)	6.0
E-37	Empty plank	Empty plank	1.0
E-38	Plank with M261 19-shot rocket launcher	Plank with M261 19-shot rocket launcher	4.0
E-39	Plank with 50 cal machine gun and M260 7-shot rocket launcher	Plank with 50 cal machine gun and M260 7-shot rocket launcher	5.0
E-40	Plank with 50 cal machine gun (outboard hinge section removed)	Plank with 50 cal machine gun (outboard hinge section removed)	2.0
E-41 - E-42	Low-Rider with 3 dummy troops	Low-Rider with 3 dummy troops	23.0
E-43	Low-Rider Empty	Low-Rider with 3 dummy troops	12.0

NOTE

[1]Doors off unless otherwise noted.

14. All tests with rocket launchers were performed with empty pods except for the test shown in figure E-35. That test was specifically conducted to show the drag effects of the rockets in the pods. There was no change in drag between a 7-shot launcher full and empty.

15. The low rider with 6 dummy troops showed the greatest amount of increased drag, and resulted in a loss of approximately 26% in maximum specific range, and a corresponding 20 KIAS reduction in airspeed for best specific range as compared to the EPS empty configuration.

Autorotational Descent Performance

16. The autorotational descent performance of the AH-6G was evaluated with EPS empty and EPS full to determine the airspeed for minimum rate of descent ($V_{\min R/D}$), the airspeed for maximum glide distance ($V_{\max glide}$), and the effects of rotor speed on rate of descent in autorotational flight. Data are presented in figures E-44 through E-47. The airspeed for maximum glide distance with EPS empty was 72 KCAS at the minimum allowable rotor speed of 410 (86%) rpm. The minimum rate of descent airspeed was 55 KCAS. In the EPS full configuration, the airspeed for maximum glide distance was 64 KCAS at 86% rotor speed. Minimum rate of descent airspeed was 54 KCAS.

HANDLING QUALITIES

Control Positions in Trimmed Forward Flight

17. Control positions in trimmed forward flight were evaluated in conjunction with level flight performance testing. Test results are presented in figure E-48. During all conditions tested, increasing forward longitudinal trim control positions were required at increasing forward airspeeds. Trim control position variations showed no discontinuity, and adequate control margins were available. The control positions in trimmed forward flight for the AH-6G are satisfactory.

Static Longitudinal Stability

18. Collective fixed static longitudinal stability characteristics were evaluated in level flight, climbs and descents at the conditions presented in table 2. Data are presented in figures E-49 through E-63. Positive static longitudinal stability near trim was exhibited as indicated by the requirement for increasing forward longitudinal control displacement with increased airspeed. The gradient of longitudinal position with airspeed was shallow except during maximum power climb where the gradient became steeper. Pitch attitude, control force, and control displacement cues to an off trim condition in a speed range of ±20 kts from trim were minimal and nearly imperceptible to the pilot. The difficulty in airspeed control associated with poor control force and position cues increased pilot workload, and is a shortcoming.

Static Lateral-Directional Stability

19. Static lateral-directional stability characteristics were evaluated in climbs, descents, and level flight at the configurations and conditions presented in table 2. Data are presented

in figures E-64 through E-83. The aircraft exhibited positive static directional stability at all conditions tested, as indicated by increased left directional control with increased right sideslip, and right directional control with left sideslip. Positive dihedral effect was indicated by increased right lateral control with increased right sideslip, and increased left lateral control with left sideslip. Sideforce cues were weak about trim as evidenced by the small change in roll attitude with sideslip. All control force gradients were qualitatively considered satisfactory. The static lateral-directional stability characteristics of the AH-6G are satisfactory.

Maneuvering Stability

20. Maneuvering stability was evaluated in left and right descending turns, and during symmetrical pull-ups and pushovers. The data are presented in figures E-84 through E-94. Representative time histories of control positions for left turns at roll attitudes up to 60 deg are presented in figures E-95 and E-96. Collective fixed maneuvering stability in steady state turns as indicated by variation of longitudinal control position with load factor was positive. The maneuvering stability became less as airspeed increased for both left and right descending turns. In all configurations tested, turns to the right were significantly easier to accomplish than turns to the left. During descending turns, (fig. E-95) a 2 to 3 sec period yaw rate oscillation developed and the aircraft ratchetted around the turn. Handling qualities began to degrade at gross weights above 3000 lb in that pilot workload to maintain constant airspeed and bank angle became increasingly more difficult. At gross weights above 3500 lb, the handling qualities of the AH-6G were unsatisfactory.

21. At gross weights below 3000 lb, airspeed could be maintained within ±5 KIAS and angle of bank within ±5 deg for roll attitudes less than 45 deg. The maneuvering stability characteristics of the AH-6G are satisfactory at gross weights below 3000 lb and density altitudes below 7000 ft.

22. At gross weights above 3500 lb, pitch instability, roll and yaw oscillations and blade stall occurred at bank angles greater than 35 deg (fig. E-96). Blade stall was characterized by increased aircraft vibration (VRS 5), longitudinal control feedback (estimated 20 lb), and very high downward forces on the collective control (estimated 30 lb). The pitch instability required large (±2) inch longitudinal cyclic inputs to maintain airspeed within ±5 knots. During symmetrical pull-ups, the aircraft had a significant dig-in tendency requiring the test to be terminated prior to reaching the maximum load factor of the aircraft. The pitch instability that occurred at high load factors above gross weights of 3500 lb prohibited utilization of the maximum load factor capabilities of the aircraft and is a shortcoming.

Dynamic Stability

General

23. Dynamic stability was evaluated during level flight, climbs and descents at the conditions shown in table 2. Data are presented in figures E-97 through E-109. The longitudinal, lateral and directional short term dynamic stability characteristics were evaluated following single axis, 1/2 sec, 1 inch pulse cyclic inputs, during 1 inch pedal

doublets, and during releases from steady heading sideslips. Long term longitudinal characteristics were evaluated by either decreasing or increasing airspeed ten knots, then returning the controls to the trim position and observing the aircraft response. All controls were held fixed until the motion subsided or until recovery became necessary. During dynamic stability testing, two problem areas were encountered. One was an easily excited, neutral to lightly damped lateral-directional oscillation (LDO) which developed most easily and with greatest amplitude with the universal mounts and 19-shot rocket launchers installed. The second problem was an easily excited, divergent, long term pitch oscillation which developed independent of aircraft configuration or gross weight. Both oscillations developed in climbs or level flight, with or without a noticeable control input or atmospheric disturbance.

Lateral-Directional Oscillations

24. Figure E-97 displays the neutrally damped LDO which was uncommanded and excited by very light turbulence. Time histories of releases from steady heading sideslips are presented in figures E-98 through E-102. In level flight, releases from both left and right sideslips produced similar results: approximately 4 overshoots in pitch, roll and yaw occurring preceding return to trimmed level flight. Following release from a 10 degree right sideslip in climbing flight at 66 knots and takeoff power (fig. E-100) the LDO immediately developed. The LDO was neutrally damped and after approximately 8 sec, excited the long term oscillation. Releases from 20 degree sideslips in 1000 fpm descents are shown in figures E-101 and E-102. Suppressing the LDO to maintain heading within ±3 deg and trim within ±1/4 ball required continuous small (1/8 to 1/4 inch) longitudinal, lateral and pedal inputs every 1 to 2 sec. The excessive control requirements to counteract the LDO tendencies of the aircraft could adversely affect such missions as gun or rocket firing (HQRS 5). The easily excited, lightly damped, lateral-directional oscillation of the AH-6G that occurs in all flight regimes is a shortcoming. The lateral-directional oscillation did not meet the requirements of MIL-H-8501A, para 3.2.11 (a) in that the oscillation persisted following a longitudinal disturbance.

Long Term Response

25. Representative time histories of long term response are depicted in figures E-107 through E-109. The longitudinal long term response was easily excited in both level and climbing flight. In level flight at 65 KCAS, the long term response was neutrally to lightly damped. At 85 KCAS in level flight and at 65 KCAS in climbing flight, the long term response was divergent after one cycle. Suppressing the long term response to maintain airspeed within ±5 knots required frequent small 1/8 to 1/4 inch longitudinal cyclic inputs every 2 to 3 sec (HQRS 4). The divergent long term longitudinal pitch response of the AH-6G is a shortcoming.

Controllability

26. Longitudinal and lateral controllability tests were conducted during level flight at approximately 65, 85 and 100 KCAS. Lateral and directional controllability tests were conducted at a hover. The test conditions are shown in table 2. Control response and

control sensitivity data are shown in figures E-110 through E-125. Pedal inputs of approximately 1 inch at a hover generated yaw rates greater than 60 deg/sec after one sec in both directions. Right yaw rates developed more quickly than to the left. At a mission gross weight of 3400 lb, recovery from left and right directional control step inputs required constant attention to torque limits and required smooth control movements to arrest yaw rates without including an overtorque condition.

27. Control response (maximum rate per inch) and sensitivity (maximum acceleration per inch) gradients were linear for hover and forward flight. Controllability data could not be obtained for aft longitudinal control step inputs greater than one inch at 60 KCAS due to the onset of main rotor blade stall. Heavy (estimated 15 lb) longitudinal and collective control feedback forces required recovery prior to achieving maximum pitch rate. The aircraft was very responsive in all axes and did not cause the pilot to overcontrol. Generally, controllability was the same for all configurations tested. Right lateral control inputs generated cross coupling in yaw that occasionally required recovery prior to obtaining maximum roll rates. The controllability characteristics of the AH-6G are satisfactory.

Slope Landing Characteristics

28. The slope landing and takeoff characteristics were evaluated in winds of less than 3 knots, at the conditions shown in table 2. Vertical landings and takeoffs were performed on a compacted slope. Control margins, aircraft attitudes, and the ability to maintain positive control during landings and takeoffs were investigated. The aircraft attitudes were measured at the aircraft leveling plate with an inclinometer, and the slope angles were measured on the skids with a leveling bar. The difference between aircraft attitude and slope angle was due to compression differential of the landing gear struts. Data for maximum slope angles are shown in table 4.

29. The technique employed during landings and takeoffs was essentially the same for each slope tested and was in accordance with the Aircrew Training Manual (ATM) (ref 10). Coordinated cyclic, collective, and directional control movements were required until the helicopter was firmly positioned on the slope. During an 8 degree nose-downslope landing, the tail stinger contacted the ground and required continuous aft longitudinal control to arrest aircraft downslope motion. The aft longitudinal stop was reached simultaneously as the aircraft came to rest firmly on the ground. Nose-upslope landing and takeoffs were easy to accomplish. The aircraft maintained position on the slope after each landing except following the 12 degree left skid down-slope landing with asymmetrical loading where the aircraft slid two inches downslope after collective was lowered. The lateral control stops were contacted during right skid down and left skid down slope landings at 12 deg and 14 deg, respectively, but did not prevent a successful landing. The pilot's legs restricted left and right cyclic movement during left and right slope landings. Slope landings and takeoffs in all directions tested were satisfactory. The slope landing limits for this aircraft should be established at 10 deg for nose-up, 7 deg for nose-down, and 12 deg for left and right slope landings.

Table 4. Slope Landing and Takeoff Control Margins

Average Gross Weight (lb)	Average CG Location Long (FS)	Average CG Location Lat (BL)	Average Density Altitude (feet)	Average OAT (°C)	Configuration
3380	100.4(MID)	0.0 (MID)	2000	8.5	Universal Mount with 2 19-shot rocket launchers

Slope (deg)	Aircraft Attitude (deg)	Minimum Control Margins Remaining (in.)			
		Longitudinal		Lateral	
		Landing	Takeoff	Landing	Takeoff
12.4	13.2 right side down	No Factor[1]	No Factor	0 from left stop	0 from left stop
14.2	18.5 left side down	No Factor	No Factor	0 from right stop	0 from right stop
10.9	12.9 nose up	No Factor	No Factor	No Factor	No Factor
8.2	8.2 nose down	0 from aft stop	0 from aft stop	No Factor	No Factor

Average Gross Weight (lb)	Average CG Location Long (FS)	Average CG Location Lat (BL)	Average Density Altitude (feet)	Average OAT (°C)	Configuration
3490	100.5(MID)	4.8 LEFT	2000	8.5	Universal Mount with 2 19-shot rocket launchers

Slope (deg)	Aircraft Attitude (deg)	Minimum Control Margins Remaining (in.)			
		Longitudinal		Lateral	
		Landing	Takeoff	Landing	Takeoff
15.5	14.3 right side down	No Factor	No Factor	0.5 from left stop	0.5 from left stop
12.4	18.0 left side down	No Factor	No Factor	0 from right stop	0 from right stop
10.4	12.8 nose up	No Factor	No Factor	No Factor	No Factor
7.7	7.8 nose down	0.7 from aft stop	0.6 from aft stop	No Factor	No Factor

NOTE:

[1]Control margins in excess of 3 inches are considered no factor.

30. Vertical clearance between the main rotor tip path plane and the ground is extremely reduced on the up-slope side of the helicopter. Personnel must be warned not to approach or depart the aircraft from the up-slope side. The following WARNING should be placed in chapter 8 of the operator's manual:

WARNING

Personnel approaching and departing from the aircraft should be aware of the reduced vertical clearance between the main rotor blades and the ground during slope landing operations.

Low-Speed Flight Characteristics

General

31. The low-speed flight characteristics of the AH-6G were evaluated at the conditions listed in table 2. The data are shown in figures E-126 through E-155. The evaluation was conducted at a skid height of approximately 10 ft with surface winds of less than 3 knots. Data were obtained incrementally from 0 to 30 KTAS utilizing a calibrated ground pace vehicle for speed reference in 45 degree azimuth increments.

Forward and Rearward Flight

32. Control positions in forward and rearward flight for various external configurations are presented in figures E-132, 142, and 152. The handling qualities in forward flight from 0 to 30 KTAS were similar for all configurations, in that the aircraft was easy to fly, requiring small (±1/8 to 1/4 inch) control movements to maintain heading within ±5 deg, altitude within ±2 ft and airspeed within ±2 knots. Rearward flight, however, was more difficult for all configurations tested. At 5 KTAS rearward flight, roll oscillations of approximately ±2 deg required small (±1/4 inch) lateral cyclic movement to maintain lateral position within 2 ft. At 10 to 15 KTAS rearward flight, longitudinal and directional control movements were more dominant. Sharp uncommanded yaw excursions of ±10 deg required rapid (1 to 2 per sec), moderate (±1/2 inch) pedal inputs to maintain heading ±5 deg. Maintaining heading while hovering in 10 to 15 knot rearward gusting winds is extremely difficult and could adversely affect a mission such as gun or rocket firing. At 20 KTAS, the aircraft became easier to control. Vibrations were a consistent VRS 4 except in the 10 to 15 KTAS range where a pounding 1 per rev vertical (VRS 5) developed. The minimum control margin encountered was 17% right cyclic remaining at 25 knots rearward flight in asymmetric configuration 2 (fig. E-152). The trimmed flight control positions in forward and rearward flight from 0-30 KTAS are satisfactory. Sharp uncommanded yaw excursions at 10 to 15 KTAS in rearward flight is a shortcoming.

Sideward Flight

33. Control positions for left and right sideward flight are presented in figures E-134, 144 and 154. For all configurations, right sideward flight required right and slight forward cyclic and left sideward flight required left and aft cyclic. The gradient of lateral cyclic travel with sideward airspeed was relatively linear and positive with the gradient being somewhat more shallow in left sideward flight than to the right. The handling qualities in sideward flight

were similar for all configurations tested in that the aircraft was easy to fly below 10 KTAS. Right sideward flight was easier to accomplish than left sideward flight. In left sideward flight transitioning from 10 to 30 KTAS and in right sideward flight transitioning from 10 to 20 KTAS, large (5 to 10 deg), sharp and rapid yaw excursions required up to ±one inch of pedal inputs to maintain heading within ±10 deg. Maintaining heading during steady winds requires only a moderate pilot workload. However, maintaining heading in sideward gusting winds is extremely difficult, and could adversely affect missions such as gun or rocket firing. The minimum control margin encountered was 15% right cyclic remaining at 30 KTAS in right sideward flight in asymmetric configuration 2 (fig. E-154). Vibrations were mainly 1 per rev vertical at a fairly consistent VRS 3 except between 15 to 25 KTAS where the vibration increased to a VRS 4. Large, sharp and rapid yaw excursions of 5 to 10 deg in left sideward flight from 10 to 30 KTAS is a deficiency.

Critical Azimuth

34. For all configurations, the critical azimuth was determined to be 225 deg based on extensive pilot workload. From 0 to 20 knots the handling qualities in all three configurations were similar. From 0 to 10 knots control inputs of less than 1/4 inch were occasionally required to maintain lateral position within ±2 ft, heading within ±5 deg, and altitude within ±2 ft. As airspeed increased, the aircraft became increasingly more difficult to control. At 15 KTAS, high uncommanded yaw rates required up to 1 inch pedal inputs to maintain heading within ±5 deg, and pitch oscillations of 2 to 3 deg required frequent (every 1 to 2 sec) longitudinal cyclic inputs of up to 1/2 inch to maintain position within ±2 ft. Pilot workload continued to increase up to 25 knots where 10 to 20 degree yaw excursions and pitch oscillations of 3 to 5 deg required up to 2 inch pedal and 1 inch longitudinal cyclic inputs to maintain aircraft control. With 2 19-shot rocket launchers installed and EPS empty, the aircraft became much more stable between 25 and 30 KTAS. Yaw and pitch excursions at 30 KTAS were half the amplitude of excursions noted at 25 KTAS and also reduced in frequency. In asymmetric configuration 2, the handling qualities continued to deteriorate up to 30 KTAS. At 30 KTAS maintaining aircraft heading ±10 deg, airspeed ±5 KTAS and lateral position ±5 ft could not be accomplished and control of the aircraft was in question. The excessive uncommanded pitch, roll and yaw oscillations with left quartering tailwinds in excess of 15 knots is a deficiency. The following CAUTION should be included in the operator manual:

CAUTION

> Large uncommanded pitch, roll, and yaw oscillations may occur with left quartering tail wind in excess of 15 knots or during left rearward flight above 15 knots.

Mission Maneuvering Characteristics

35. A limited qualitative evaluation of mission maneuvering characteristics was conducted during performance of simulated mission tasks at gross weights between 2700 and 3800 lb. Aircraft agility and maneuverability were assessed during accelerations, quick stops, low level flight and simulated running fire with a return to target. Applicable maneuvers were flown in accordance with and to the performance standards described in the Observation

Helicopter ATM (ref 10). The mission maneuvering tasks were easily accomplished at gross weights of 3000 lb and below but became significantly more difficult above this weight. The combination of pitch instability at high load factors (para 22), rotor speed droop (para 37), and high control feedback forces (para 38) prevented satisfactory mission task accomplishment at gross weights above 3500 lb and is a deficiency. Aggressive maneuvering did not meet the intent of MIL-H-8501A, paragraphs 3.2.8 and 3.4.2 in that collective and cyclic control forces were higher than allowed in table 2 of the specification.

High Gross Weight Characteristics (above 3500 pounds)

Rotor Speed Droop

36. Rotor speed droop characteristics were evaluated during simulated mission maneuvers. During nap-of-the-earth (NOE) decelerations at high gross weights (above 3500 lb) the rotor speed drooped approximately 30 rpm during final application of the collective. Associated with the rpm droop was an uncommanded yaw oscillation ($\pm$10 deg) requiring pedal inputs of up to $\pm$1 inch to maintain heading within $\pm$5 deg. Excessive rotor speed droop during rapid collective application is a shortcoming.

Control Feedback Forces

37. Flight control forces were evaluated during normal operations and mission maneuvering. The mechanical reversible flight control system produced feedback forces in all flight regimes. During normal flight operations, control forces could be trimmed to acceptable levels. However, during aggressive maneuvering at high gross weights (above 3500 lb), excessive collective force (estimated 30 lb) and cyclic control force (estimated 20 lb) would suddenly develop with the onset of g loading. During maneuvering stability testing (para 22) at 45 deg of bank, both the pilot and flight test engineer had to hold the collective to accurately maintain the original power setting. The pullout from a return to target maneuver was initiated with a climbing 60 deg right hand turn. Sudden download collective forces overcame the pilot's ability to maintain collective control position, thus placing the aircraft in a rapid descent. Recovery could only be effected by rolling out of the turn prematurely. Excessive cyclic and collective forces during aggressive maneuvering flight at high gross weights (above 3500 lb) is a shortcoming.

Trimmability

38. During the course of the mission maneuvering evaluation, the trimmability characteristics of the flight control system were evaluated. During each maneuver, pilot trim system control inputs were accomplished through the BEEP TRIM switch located on the pilot and copilot cyclic stick. Upon activation of the BEEP switch, a noticeable delay occurred prior to relief of undesirable control forces. The delay, coupled with extremely low trim rates, made trimming difficult and unpredictable. Eliminating fatigue generating control forces during aggressive maneuvering was so difficult that it eventually resulted in the pilot not trimming at all, or trimming ahead of the anticipated maneuver. The poor trimmability characteristics were more prevalent at gross weights above 3500 lbs. The combination of trim delay and slow trim rates made retrimming of control forces difficult and unpredictable and is a shortcoming.

Simulated Engine Failure

39. Simulated sudden engine failures were evaluated in level flight and during takeoff power climbs at the conditions presented in table 2. Representative time histories are presented in figures E-156 through E-163. Sudden loss of engine power was simulated by rapidly reducing the throttle to the flight idle position while maintaining controls fixed. The controls remained fixed for increasing periods of time in an attempt to attain a 2 sec delay or until the minimum transient rotor speed (410 rpm) dictated an earlier recovery. Simulated engine failure characteristics were similar for all configurations tested and only the recovery technique varied due to differences in gross weights.

40. At gross weights significantly less than 3500 lb, initial aircraft response was an immediate yaw to the left, followed closely by a slow left roll requiring right lateral cyclic (up to 1.5 inches) and right pedal (up to 1.5 inches). Prior to reducing collective, a high (greater than 75 rpm/sec) rate of rotor decay occurred. After the collective control was lowered, a rapid nose down pitch rate developed which required an immediate 3 to 5 inches aft cyclic input to establish the recommended autorotation airspeed of 65 KIAS. During descent, collective pitch was continually adjusted to maintain the desired rotor speed since small variations in airspeed or attitude resulted in large variations ($\pm$25 rpm) in rotor speed. The time available for pilot recognition and reaction to sudden engine failure (delay time) was determined for all test conditions below 3500 lb. Delay time for maximum power climb averaged less than 1 sec, while delay times in level flight ranged from 2 sec at 60 KCAS to 1 sec at 110 KCAS. The large control inputs required to establish an autorotational descent coupled with rapid rotor speed decay and rotor speed control sensitively are a shortcoming. Collective delay time allowable following a sudden engine failure did not meet the requirements of MIL-H-8501A, paragraph 3.5.5 in that collective delay time of 1 sec during climb at 60 kts and level flight at 110 kts were less than the required 2 seconds.

41. At gross weights above 3500 lb, collective did not have to be adjusted at engine failure since the collective positions for powered flight and stabilized autorotation were approximately the same. Rapid collective control reduction could result in rotor overspeed.

Autorotational Landing Characteristics

42. Straight-in autorotational landing characteristics at gross weight to 3200 lb were evaluated to verify prior contractor test results. Tests were initiated at an altitude of 700 ft AGL at 80 KIAS. Autorotational entry was accomplished by lowering collective to full down, rolling the throttle to flight idle position, and establishing a 65 KIAS attitude. Representative time histories of autorotational landings are presented in figures E-164 and 165. Once autorotation entry was initiated, an increase in collective was sometimes required in order to maintain rotor speed within the mid to low range (420-447 rpm). Maintaining this rotor speed during the descent minimized the possibility of a rotor overspeed at the 50 ft deceleration altitude. Autorotational rate of descent was approximately 2000 fpm at 65 KIAS at all gross weights tested. Pitch rate and collective application had to be combined to maintain rotor speed within limits and provide an effective flare. A flare attitude of 15 deg or less failed to produce adequate rotor speed (500 rpm) to effectively cushion the touchdown and usually resulted in excessive ground

runs. Conversely, decelerative nose-up attitudes in excess of 30 deg resulted in excessive rotor speed buildup and inadequate tail skid clearance at initial pitch pull. Although the larger pitch attitudes produced minimum ground run (less than 30 ft), the requirement for a rapid (within 1 sec), 5 inch increase in collective control and a large (2.5 inch) forward cyclic input just prior to touchdown increased pilot workload significantly (HQRS 5). The optimum deceleration attitude was approximately 20 deg nose-up. At approximately 10 ft AGL, simultaneous forward cyclic and up collective were required to touchdown smoothly in a level attitude. Autorotational landings up to 3200 lb gross weight can consistently and safely be accomplished utilizing this technique and are satisfactory.

VIBRATION

43. The vibration characteristics were qualitatively evaluated during all flights. Vibration levels were generally low and acceptable except during climbs at 60 KIAS and 59 psi torque, and during rearward flight between 10 and 15 KTAS. In maximum power climbs at 60 KIAS the aircraft developed a noticeable 5 per revolution vibration and during rearward flight a pounding 1 per revolution vibration was noticed between 10 and 15 KTAS.

44. Vibration data of the plank were measured and recorded at various plank locations and axes as presented in paragraph 4, appendix C. Data were collected for four different configurations; plank empty, plank with 50 caliber mounted left and right, plank with 50 caliber and 7 shot rocket launcher mounted left and right , and plank with 19 shot rocket launcher mounted left and right. Rotor speed was maintained at 477 rpm. The plank vibration characteristics at the main rotor harmonic frequencies 1/rev, 2/rev and 5/rev are presented in figures E-166 through E-171 for level flight and for level turns. Representative vibration spectral plots are presented in figures E-172 through E-179. Peak vibration levels occurred at the 1/rev, 2/rev, 5/rev main rotor harmonic frequencies and at the 1/rev tail rotor harmonic frequency.

COCKPIT EVALUATION

Vertical Instrument Display System (VIDS)

General

45. The VIDS is located in the lower section of the instrument panel and was evaluated for location and readability throughout the test. The VIDS consists of a vertical scale and digital readout for engine temperature (TOT), engine torque (TRQ), power turbine speed (N2) and rotor speed (Nr).

VIDS Location

46. The VIDS location required the pilot to look left and down, away from the other flight instruments and outside his normal field of view. The pilot was also required to move his left leg to obtain full view of the VIDS. The VIDS location, coupled with the requirement to continually monitor torque and rotor speed (para 37), significantly increased pilot workload to successfully complete maneuvers and diverted the pilot's attention from other

critical mission tasks. The location of the VIDS away from other primary instruments, and being obstructed from view by the pilot's leg is a shortcoming.

VIDS Readability

47. Glare and certain lighting conditions made the VIDS very difficult to read. When operating near the maximum limits, the pilot cannot readily distinguish between yellow and red indications, requiring increased concentration to get an accurate assessment of engine and rotor status. The difficulty in quickly reading and interpreting the VIDS during certain lighting conditions is a shortcoming.

Pilot/Copilot Restraint System

48. The pilot/copilot restraint system was evaluated for ease of operation. The restraint system consist of a shoulder harness with cloth loops through which the lap belt buckle must be fastened. The lap belt buckle is very difficult to align and fasten. The force and excessive time required to fasten the restraint system delays the pilot and may lead to inadvertent nonconnection of the restraint system when operating under the pressure of mission conditions as previously reported (ref 11). The excessive time and difficulty required to fasten the restraint system remains a shortcoming.

RELIABILITY AND MAINTAINABILITY

Horizontal Tail

49. Two horizontal tails were used during these tests. The program began using the MDHC 421-0870-503 tail until cracks were found on the trailing edge after a series of high power climbs. That tail was replaced with the MDHC SKDA 4043-11 tail which was used for the remainder of the test with no structural problems.

Tail Rotor Flapping

50. To provide a full sideslip envelope, AVSCOM directed that instrumentation be installed to indicate 10% or less tail rotor flapping remaining. A light was installed in the cockpit to warn the pilot of the limit being exceeded. At high power settings, small pedal movements often caused the tail rotor to flap beyond the allowable limit. An operational pilot would have no method to determine tail rotor flapping angle, and would most likely exceed the airworthiness release limits during even the most benign maneuvers at high power settings. The ease with which the 10% flapping margin limit can be exceeded, coupled with the lack of cues following an exceedence, constitutes a deficiency.

51. At the same time the tail rotor flapping instrumentation was installed, a new tail rotor flapping stop was also installed. An inspection of the stop was required whenever the 10% remaining tail rotor flapping limit was exceeded. Throughout the test, this flapping limit was exceeded several times during operations at high gross weight (above 3500 lb) and high torque settings. During one of the required inspections, the rubber stop was found to be excessively worn (122.1 hrs since new) and was replaced. Recommend that a post flight inspection of the tail rotor stop be performed after operations at high gross weights (above 3500 lb) and high torque settings.

AIRSPEED CALIBRATION

52. The airspeed system for the AH-6G helicopter was calibrated using the trailing bomb method. The ship's system airspeed calibration in level flight, climbs, and autorotational descent are presented in figure E-180, and is satisfactory. Subsequent to the AEFA evaluation, it was determined that this calibration differed significantly from calibrations performed by the manufacturer on similar aircraft. Investigation by AVSCOM (AMSAV-6) has led them to believe that the pitot tube may have been improperly installed by the Army depot. If that is true, the calibration shown in figure 180 would be valid for this particular aircraft only.

CONCLUSIONS

GENERAL

53. The following general conclusions were reached:

a. The aircraft did not have OGE hover capability above 3643 lb standard sea level conditions, and at the maximum gross weight of 3950 lb could not hover OGE under any atmospheric conditions (para 9).

b. The overall handling qualities during mission tasks were adequate below gross weights of 3000 lb, but significantly degraded at gross weights above 3500 lb due to control feedback forces and rotor speed droop (para 35).

c. Vibration levels of the AH-6G were generally low and acceptable except during climbs at 60 KIAS and 59 psi torque, and during rearward flight between 10 and 15 KTAS (para 33).

DEFICIENCIES

54. The following deficiencies were identified.

a. Large, sharp and rapid yaw excursions of 5 to 10 deg in left and right sideward flight from 10 to 30 KTAS (para 33).

b. Excessive uncommanded pitch, roll and yaw oscillations when hovering with left quartering tailwinds in excess of 15 knots (para 34).

c. Combination of pitch instability at high load factors, rotor speed droop, and high control feedback forces that prevented satisfactory mission task accomplishment at gross weights above 3500 lb (para 35).

d. The ease with which the 10% flapping margin limit imposed by the airworthiness release can be exceeded, coupled with the lack of cues preceding and following an exceedence (para 50).

SHORTCOMINGS

55. The following shortcomings were identified and are listed in order of importance:

a. Excessive cyclic and collective forces during aggressive maneuvering flight at high gross weights (above 3500 lb) (para 37).

b. Easily excited, lightly damped, lateral directional oscillation (para 24).

c. The pitch instability that occurred at high load factor turns prohibited utilization of the maximum g capabilities of the aircraft (para 22).

d. The large control inputs required to establish an autorotational descent coupled with rapid rotor decay and rotor speed sensitively (para 40).

e. Sharp uncommanded yaw excursions at 10 to 15 KTAS in rearward flight (para 39).

f. Excessive rotor rpm droop during rapid collective application (para 36).

g. Divergent long term longitudinal pitch response (para 25).

h. The difficulty in airspeed control associated with poor control force and position cues (para 18).

i. The combination of trim delay and slow trim rates made retrimming of control forces difficult and unpredictable (para 38).

j. The location of the Vertical Instrument Display System (VIDS) away from other primary flight instruments and being visibly obstructed by the pilot's leg (para 46).

k. Difficulty in quickly reading and interpreting the VIDS during certain lighting conditions (para 47).

l. Excessive time and difficulty required to fasten the restraint system (para 48).

SPECIFICATION NONCOMPLIANCE

56. The following specification noncompliances were identified:

a. The lateral-directional oscillation did not meet the requirements of MIL-H-8501A, para 3.2.11 (a) in that the oscillation persisted following a longitudinal disturbance (para 24).

b. Aggressive maneuvering did not meet the intent of MIL-H-8501A, paragraphs 3.2.8 and 3.4.2 in that collective and cyclic control forces were higher than table 2 allows (para 35).

c. Collective delay time allowable following a sudden engine failure did not meet the requirements of MIL-H-8501A, paragraph 3.5.5 in that collective delay time of 1 sec during climbs at 60 kts and level flight at 110 kts were less than the required 2 second (para 40).

RECOMMENDATIONS

57. Correct the deficiencies listed in paragraph 54.

58. Correct the shortcomings listed in paragraph 55.

59. The following **WARNING** should be included in the operator's manual (para 30):

WARNING

> Personnel approaching and departing from the aircraft should be aware of the reduced vertical clearance between the main rotor blades and the ground during slope landing operations.

60. The slope landing limits for this aircraft be established at 10 deg for nose-up, 7 deg for nose-down, and 12 deg left and right slope landings (para 29).

61. The following **CAUTION** should be placed in the operators manual (para 34).

CAUTION

> Large uncommaned pitch, roll, and yaw oscillations may occur with left quartering tail wind in excess of 15 knots or during left rearward flight above 15 knots.

62. A post flight inspection of the tail rotor stop be performed after operations at high gross weights (above 3500 lb) and high torque settings (para 51).

APPENDIX A. REFERENCES

1. Letter, AVSCOM, AMSAV-8, 23 January 1987, subject: Airworthiness and Flight Characteristics (A&FC) Evaluation of the McDonnell Douglas Helicopter Corporation (MDHC) 530FF Helicopter. (Test Request)

2. Test Plan, AEFA, Project No. 86-15, *Airworthiness and Flight Characteristics Evaluation of the McDonnell Douglas Helicopter Corporation (MDHC) 530FF Helicopter*, February 1987.

3. Service Training Manual, Hughes 500 Model 369D, Hughes Helicopters, Inc., 15 November 1977.

4. Service Training Manual, MDHC 530F Plus Helicopter Model 369FF, McDonnell Douglas Helicopter Company, April 1986 with revision No. 2.

5. Pilot's Flight Manual, McDonnell Douglas Helicopter Company for the Hughes 530F Plus Helicopter, 25 October 1985.

6. Letter. AVSCOM, AMSAV-E, 31 January 1988, subject: Airworthiness Release for Flight Test Evaluation of the AH-6G Helicopter.

7. Flight Test Manual, Naval Air Test Center, FTM No. 105, *Stability and Control*, November 1983, Preliminary Edition.

8. Pamphlet, US Army Material Command, AMCP 706-204, Engineering Design Handbook, *Helicopter Performance Testing*, 1 August 1974.

9. Military Specification, MIL-H-8501A, *Helicopter Flying and Ground Handling Qualities; General Requirements for*, 7 September 1961, with amendment 1, 3 April 1962.

10. Aircrew Training Manual, *Observation Helicopter*, FC-215, 30 October 1984.

11. Final Report, AEFA Project No. 81-09, *Airworthiness and Flight Characteristics Test of the OH-8A Helicopter (U)*, June 1982.

12. Operation and Maintenance Manual, 250-C30 Series Allison Gas Turbine, General Motors Corp., 1 October 1986.

13. Paper, Boirun, B.H., *Generalizing Helicopter Flight Test Performance Data (GENFLT)*, AHS Preprint No. 78-44 presented at the 34th Annual National Forum of the American Helicopter Society, Washington, D.C., May 1978.

APPENDIX B. DESCRIPTION

GENERAL

1. The test helicopter is a highly modified H500D aircraft as manufactured by McDonnell Douglas Helicopter Company (MDHC), Mesa Arizona. The aircraft utilizes the H500D airframe but is upgraded to the powertrain of the commercial MDHC 530FF. Modifications include longer main and tail rotor blades, an extended tail boom, and an Allison Model 250-C30 engine. Once modified, the aircraft was designated the AH-6G (attack version) or the MH-6H (utility version) depending on the mission and external configuration.

2. The AH-6G/MH-6H is a single main and tail rotor helicopter that incorporates nonretractable skid-type landing gear. The main rotor system is a five bladed fully articulated system which permits independent blade feather, flap and lead/lag. The semi-rigid, two bladed tail rotor is mounted on the left side of the tailboom and incorporates elastomeric bearing for the flapping axis. Power is provided by an Allison Model 250-C30 engine rated at 650 shaft horsepower (shp), uninstalled at standard day sea level. The transmission is limited to 375 shp continuous, 425 shp for 30 minutes, or 450 shp for 30 seconds. The flight control system is mechanical and reversible without hydraulic boost provisions. The cockpit is arranged in a side by side configuration with conventional controls and instrumentation. Although capable of single pilot operation, a full set of flight controls is installed at the copilot station. General dimensions are presented in figure B-1. Photographs of the AH-6G and MH-6H are presented in figures B-2 through B-8 with classified photos in Appendix F. A more detailed description of the airframe of the AH-6G/MH-6H is presented in the H500D Service Training Manual (ref 3, app B) while a more detailed description of the upgraded powertrain is presented in the H530FF Service Training Manual as presented in reference 4.

AIRFRAME

3. The airframe incorporates an egg-shaped "roll bar" design which provides a rigid three-dimensional truss structure surrounding the pilot and passenger compartments (fig. B-9). The fuselage is a semi-monocoque structure that is divided into three main sections; forward, aft and lower as shown in figure B-10. The forward section houses the pilot compartment consisting of side by side seats, flight controls and an instrument panel surrounded by stretched acrylic windscreens and an over head canopy. The instrument panel is located forward of the pilot's seats at the aircraft centerline and incorporates flight and engine instruments in addition to warning and caution lights. The aft section encloses the passenger compartment which contains provisions for passenger seats and flooring designed to accommodate cargo tiedown fittings and external support provisions. Also included in the aft section is the structure for tailboom attachment, the mast support structure, the overhead transmission, and the engine, engine mounts, and engine clamshell doors. The lower fuselage structure beneath the pilots floor contains compartment space for the aircraft battery and avionics equipment, and beneath the cargo compartment houses the two fuel cells on either side of the center beam.

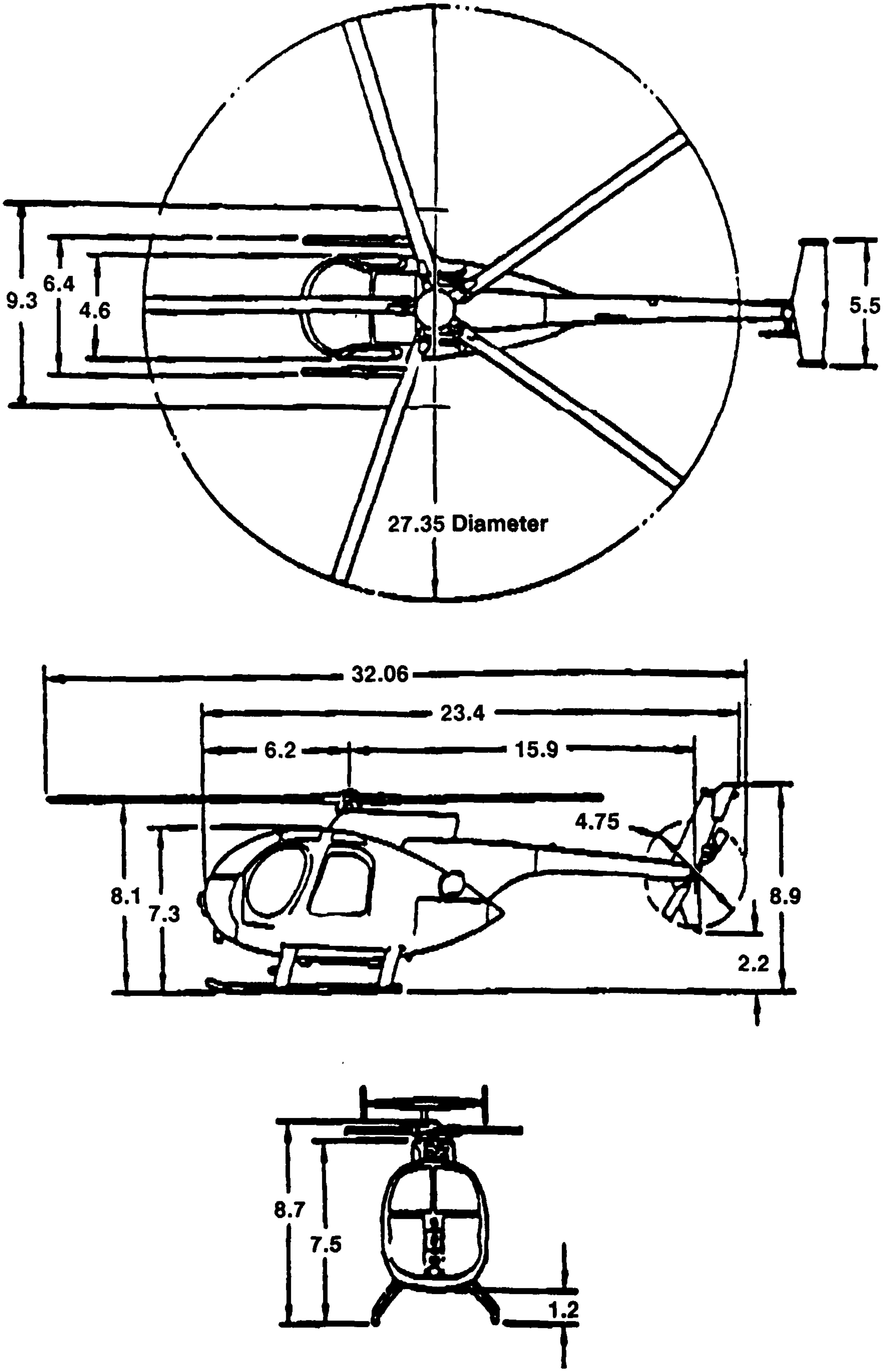


Figure B-1. MH-6H/AH-6G Helicopter – Principal Dimensions

Figure B-2. AH-6G/MH-6H – Front View

Figure B-3. AH-6G/MH-6H – Right Front Quartering View

Figure B-4. AH-6G/MH-6H – Right Rear Quartering View

Figure B-5. AH-6G/MH-6H – Rear View

Figure B-6. AH-6G/MH-6H – Left Quartering View

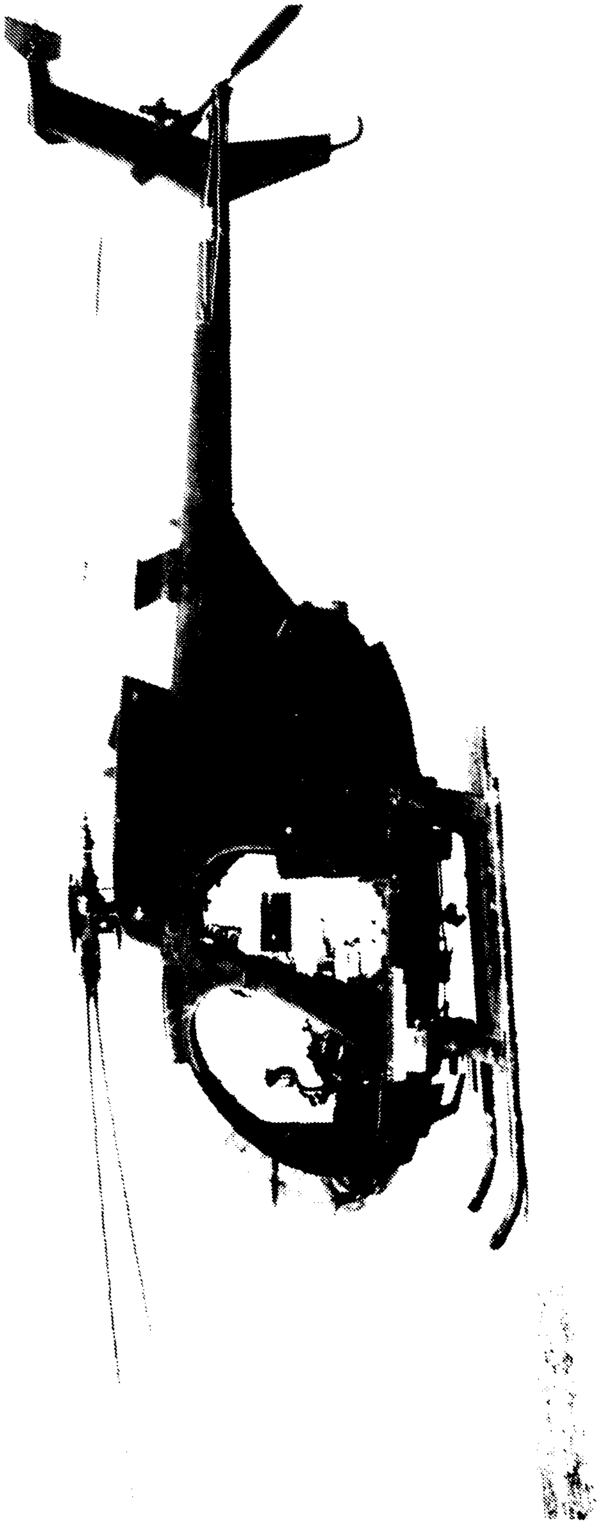


Figure B-7. AH-6G/MH-6H – Left Side View

Figure B-8. AH-6G/MH-6H – Left Front Quartering View

TAILBOOM

4. The tailboom assembly depicted in figure B-11 is a monocoque structure of aluminum skin over forged aluminum frames. The tailboom houses the tail rotor control drive shaft, tail rotor control rod, and electrical conduits. The tailboom also supports the tail rotor assembly, tail rotor gearbox, and the vertical and horizontal stabilizers. An 8 inch extension plug added to the end of the tailboom extends the tailboom to accommodate the larger main and tail rotor blades installed.

TAIL SURFACES

5. The helicopter tail surfaces consist of the vertical and horizontal stabilizers and tip plates attached to the aft end of the tailboom as depicted in figure B-12 and B-13. The vertical stabilizer is constructed of aluminum alloy skins bonded to formed spars. The entire cavity between the spars is filled with a honeycomb core, to which two outside skin surface panels are bonded. The vertical stabilizer is mounted aft-right of the tailboom and is bolted to the stabilizer mount frame just prior to the tailboom extension. The vertical stabilizer also has provision for electrical wiring for anti-collision and position lights and provides support for the horizontal stabilizer. The lower end of the vertical stabilizer incorporates a tail skid assembly. Tip plates are attached to the ends of the horizontal stabilizer with a two pound steel tip weight on the left and one pound weight on the right between the tip plate and the stabilizer. The tip plates are constructed of aluminum alloy skins bonded over a honeycomb core.

LANDING GEAR

6. The landing gear is the horizontal skid type and is not retractable. Fore and aft braces, struts, and shock absorbing dampers are attached to the underside of the fuselage center frame section. Skid tubes are attached to contoured fittings at the lower end of the struts, and provide attachment points for installation of ground handling wheels. Fiberglass/aluminum fairings are designed to reduce aerodynamic drag and cover the struts from the fuselage to the skids. The nitrogen charged landing gear dampers, between the struts and the structure are designed to act as shock absorbers to cushion landings.

LANDING GEAR FLOATION

7. During several tests, a landing gear floation system was installed on the top of each skid (fig. B-14). The EEL Emergency Flotation System, part number 312-A0-1, was utilized in the deflated mode only. The system was not fully operational in that neither electrical nor pneumatic pressure valves were connected.

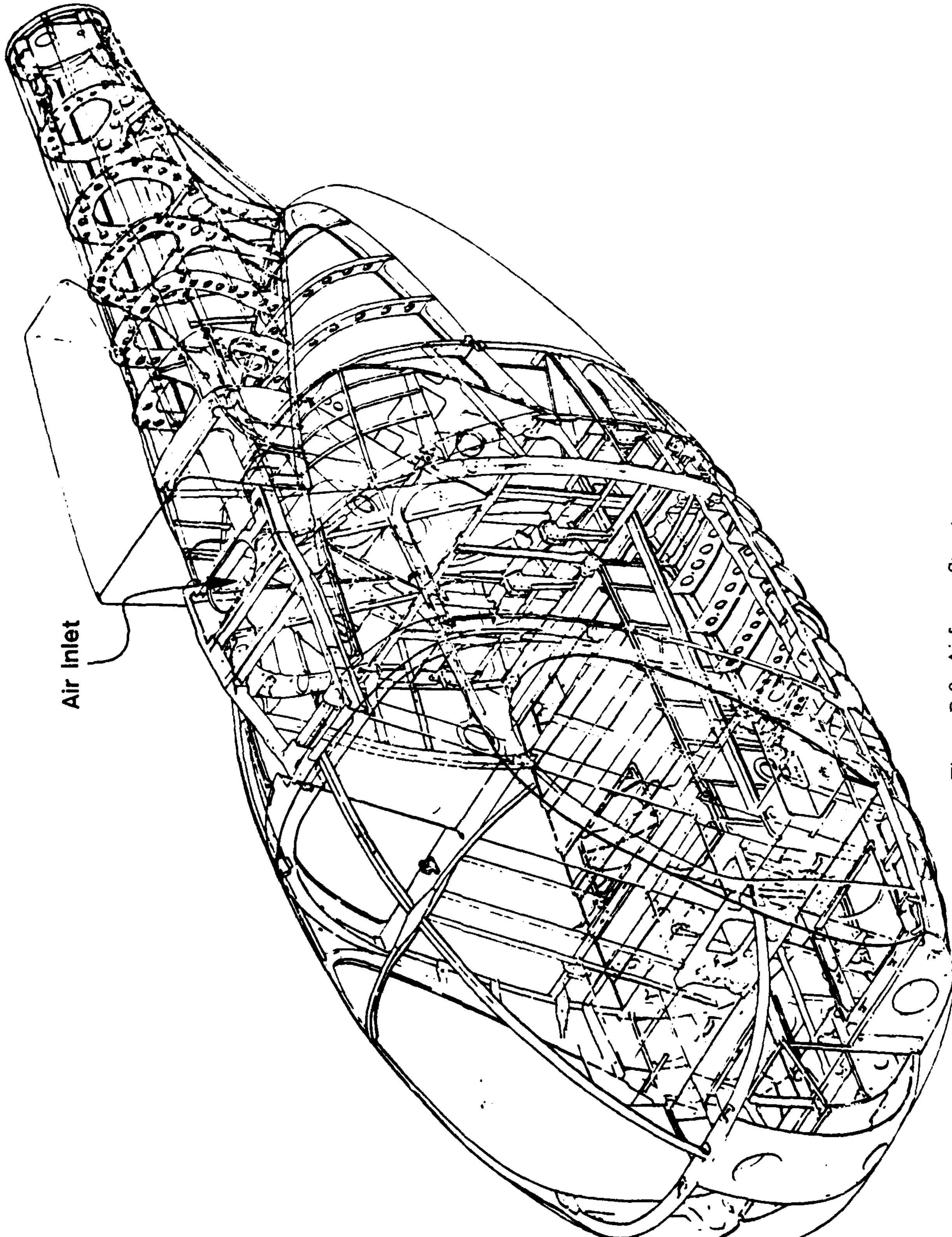


Figure B-9. Airframe Structure

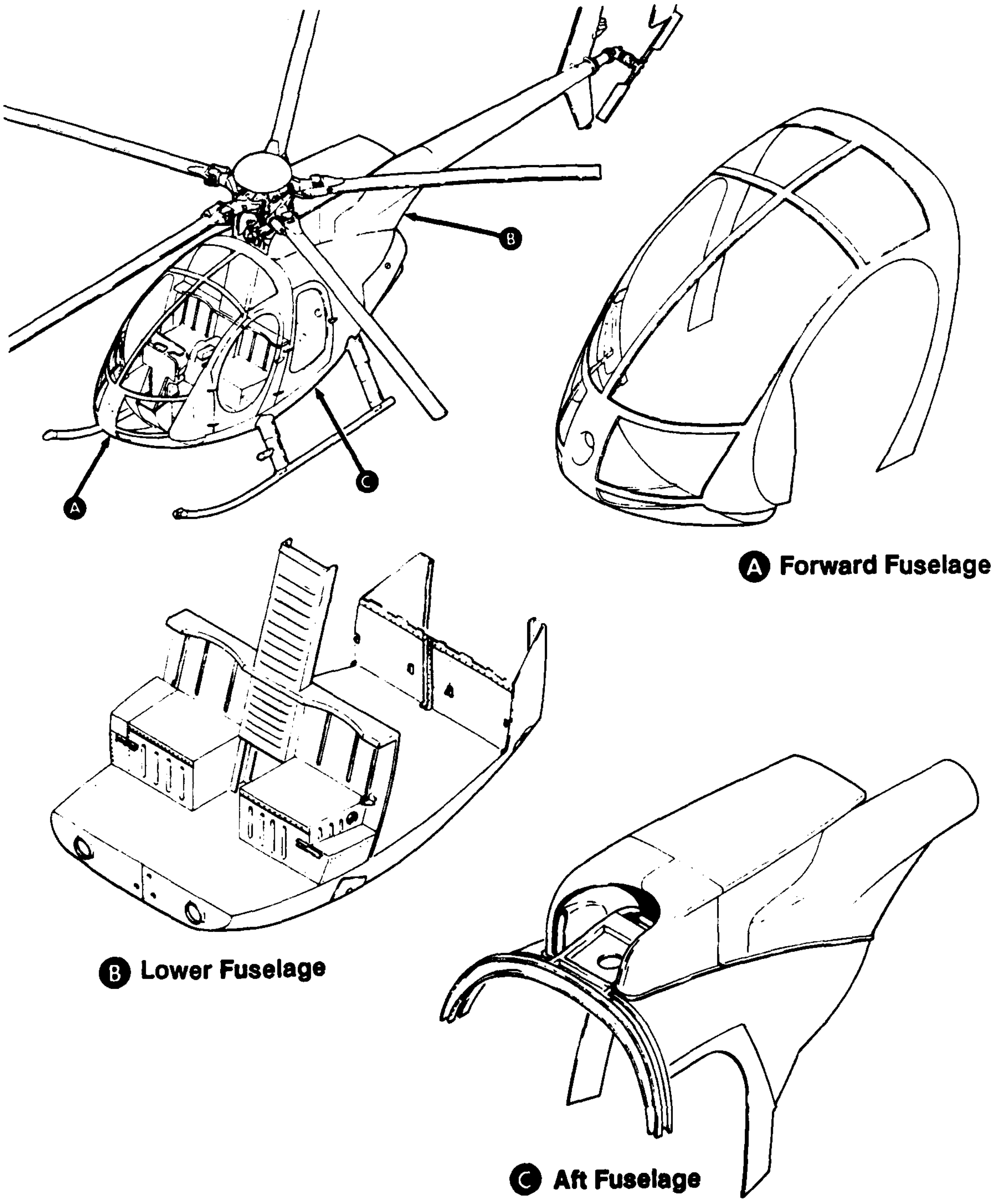


Figure B-10. Fuselage Sections

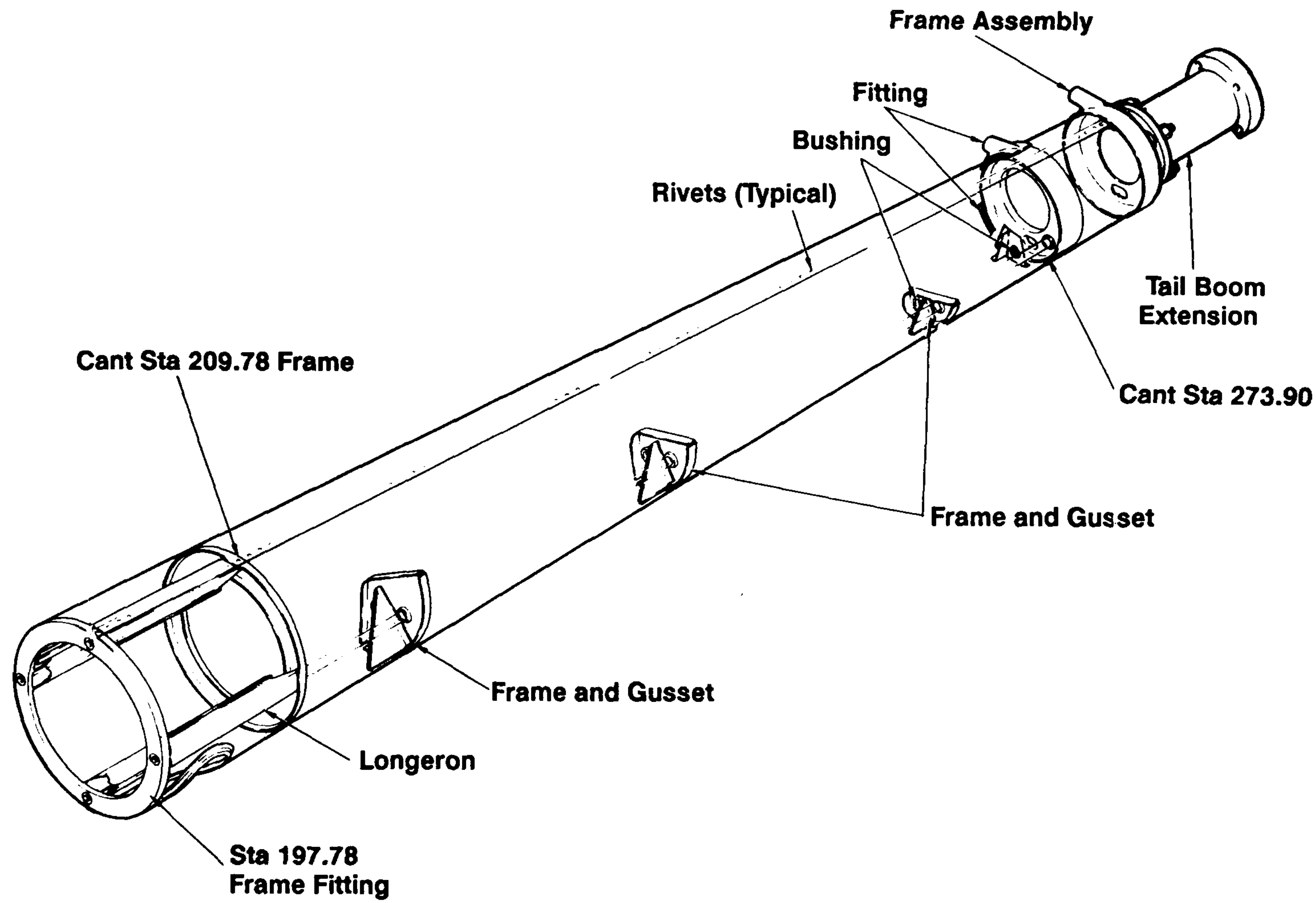


Figure B-11. Tailboom

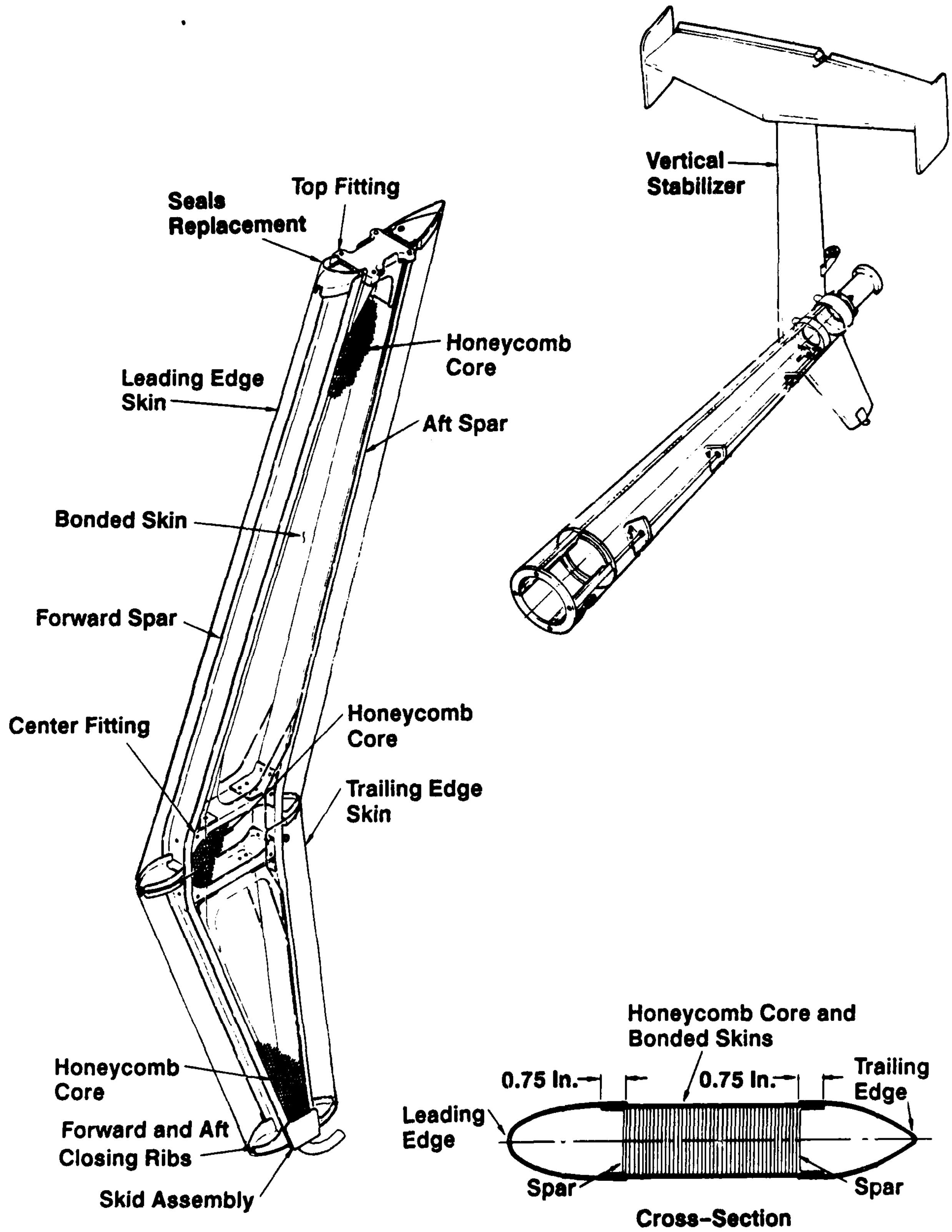


Figure B-12. Vertical Stabilizer

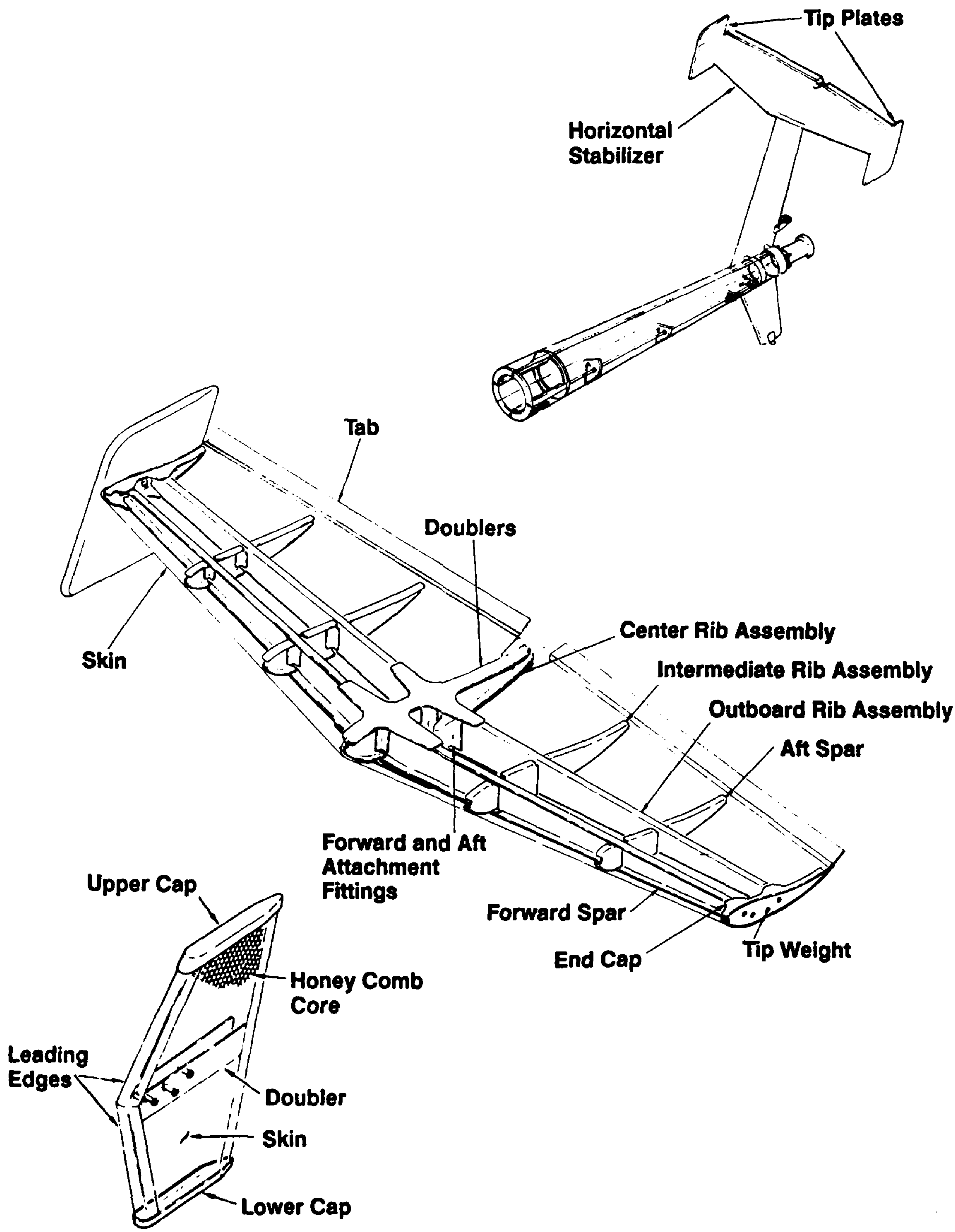


Figure B-13. Horizontal Stabilizer and Tip Plates

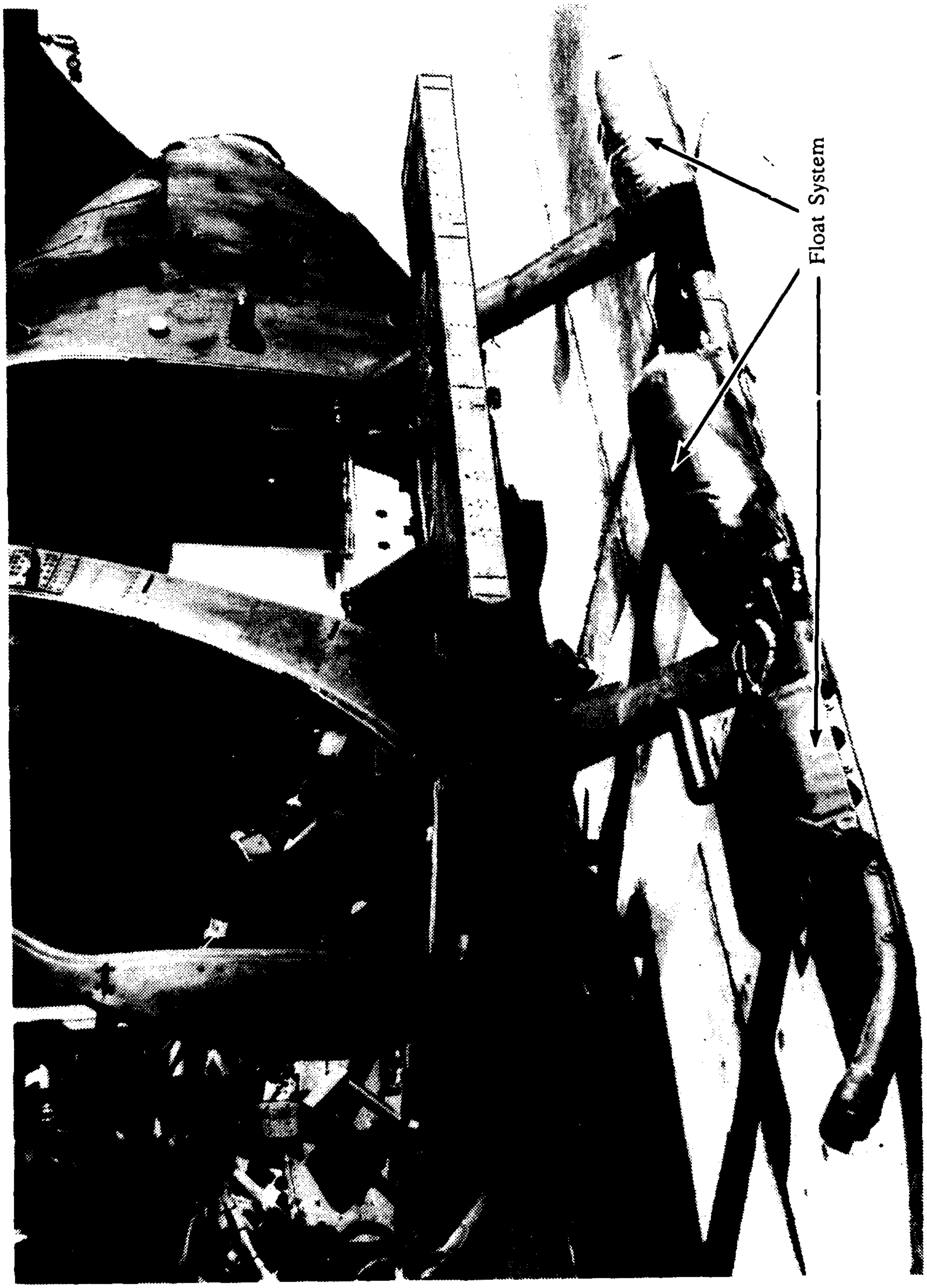


Figure B-14. Emergency Float Kit

PILOT AND CARGO DOORS

8. Pilot and passenger/cargo doors can be easily installed and removed on the AH-6G/MH-6H (fig. B-15). The doors are bonded aluminum alloy frames containing cast acrylic windows. Plastic snapvents, designed for the intake or exhaust of ventilating air, are installed in each window. Each door can be jettisoned by pulling a jettison handle or a rope connected to pip pins.

CARGO HOOK

9. Provisions for the attachment of a cargo hook are located on the bottom of the fuselage in line with the center beam at FS 99.3. The Hughes 369H90072-511 Cargo Hook Kit was installed for this project to carry a jettisonable ballast box (figs. B-16 through B-19) and used for tethered hover tests. The system consists of a cargo hook, electrical wiring, an electrical release switch, and a manual release handle located on the pilots cyclic. The cargo hook is rated to carry up to 2000 lb.

FLIGHT CONTROLS

General

10. Conventional cyclic, collective and adjustable pedal controls are provided at the right and/ or left crew positions. The entire control system is a solid mechanically linked reversible type that is unboosted and unaugmented. Adjustable friction devices which may be varied to suit the individual pilot are incorporated on the right side collective, cyclic and throttle controls. In additions, electric cyclic control trim actuators are incorporated to reduce control forces in flight. Pilot inputs are routed from the control sticks via mechanical linkage consisting of a series of bellcranks and push-pull tubes to the aerodynamic surfaces. Pilot and copilot controls are mechanically connected under the center console and inputs are routed upward through the controls tunnel in the center of the forward bulkhead at FS 78.5 to the cabin roof. Required mixing of cyclic and collective inputs is accomplished through the mechanical mixing controls and transferred through the swashplates to the main rotor system. Directional pedal inputs are routed directly from the cabin roof through the tailboom to the tail rotor system. A bungee spring is installed to reduce pedal forces in cruise flight. The cyclic and collective installed at the copilot station are removable to accommodate mission configurations.

Directional Pedals

11. The directional control pedals provide for anti-torque control and are mounted on the cockpit floor as shown in figure B-20. Pilot and copilot pedals are adjustable by repositioning the pedal into one of three notches and securing the pedal with a cotter pin.

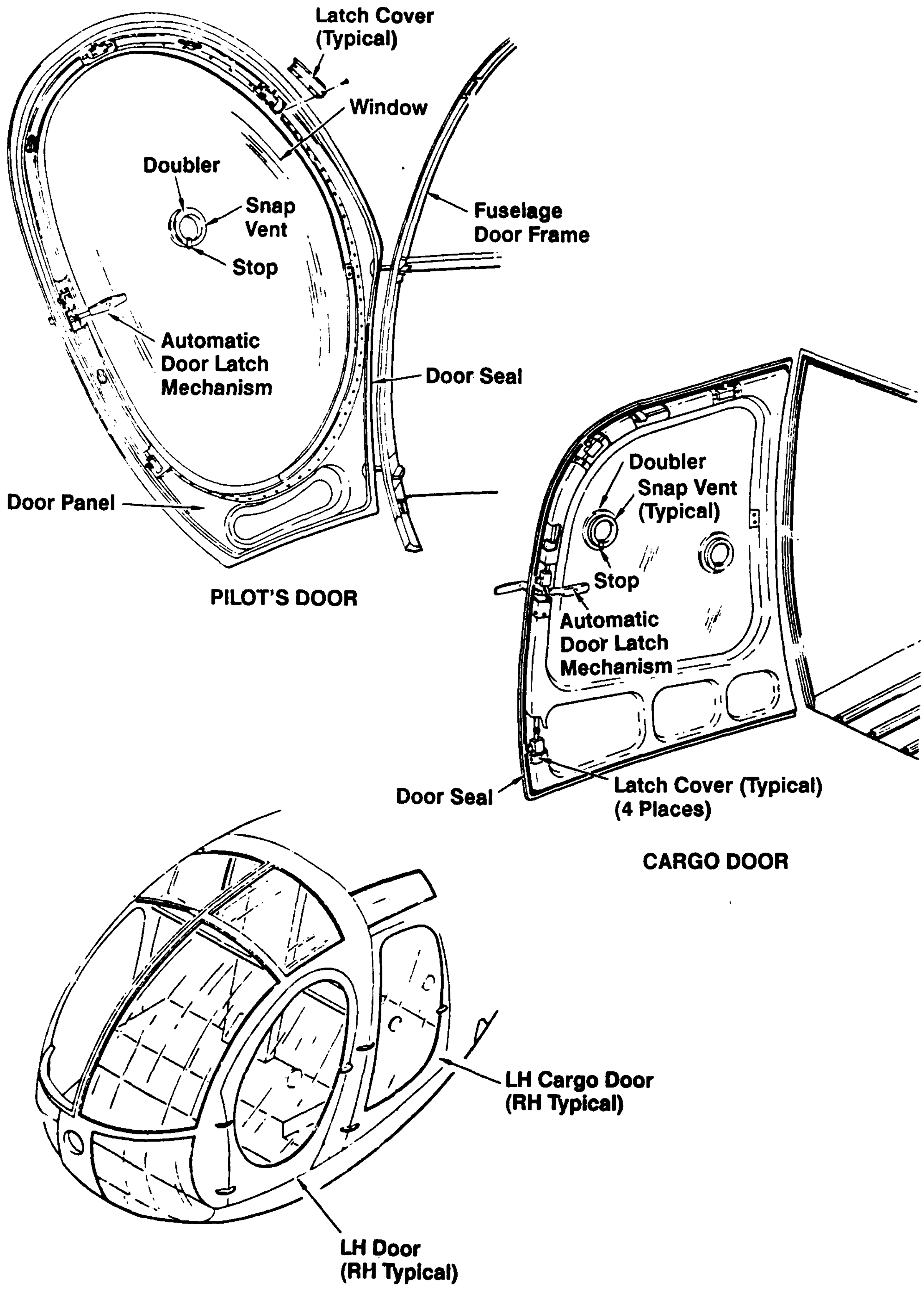


Figure B-15. Pilot's and Cargo Doors

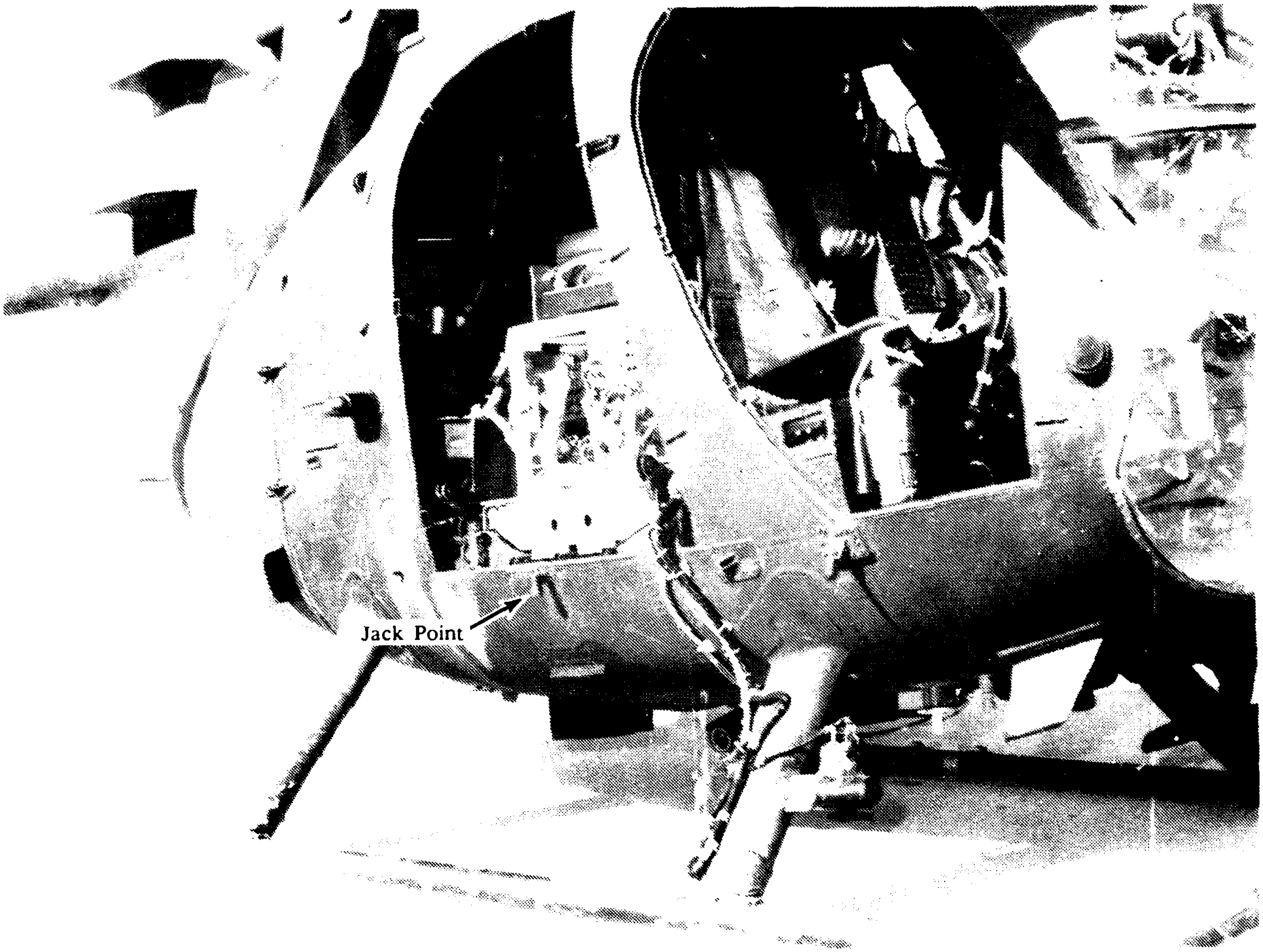


Figure B-16. Lifting Jacks

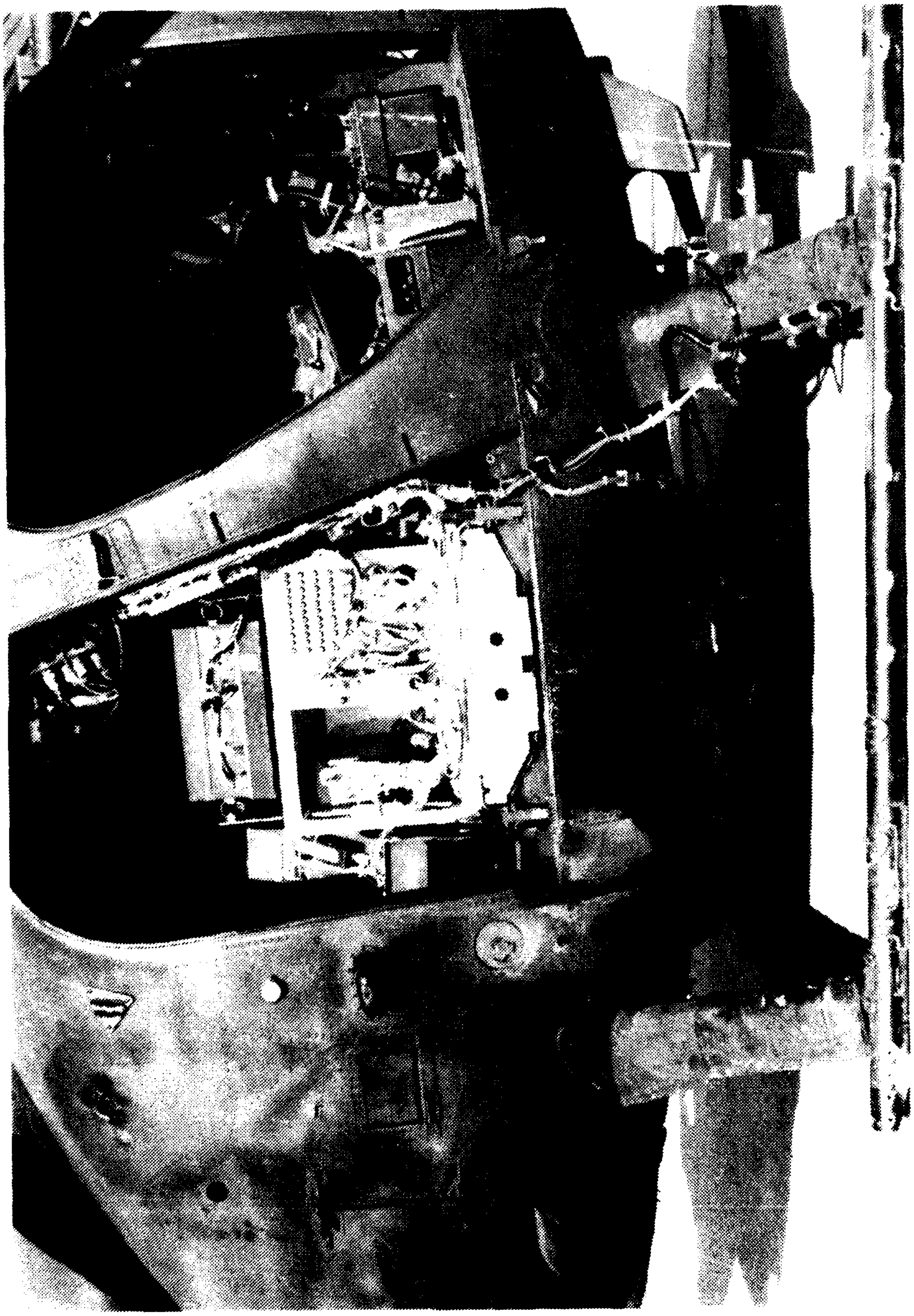


Figure B-17. Cargo Hook

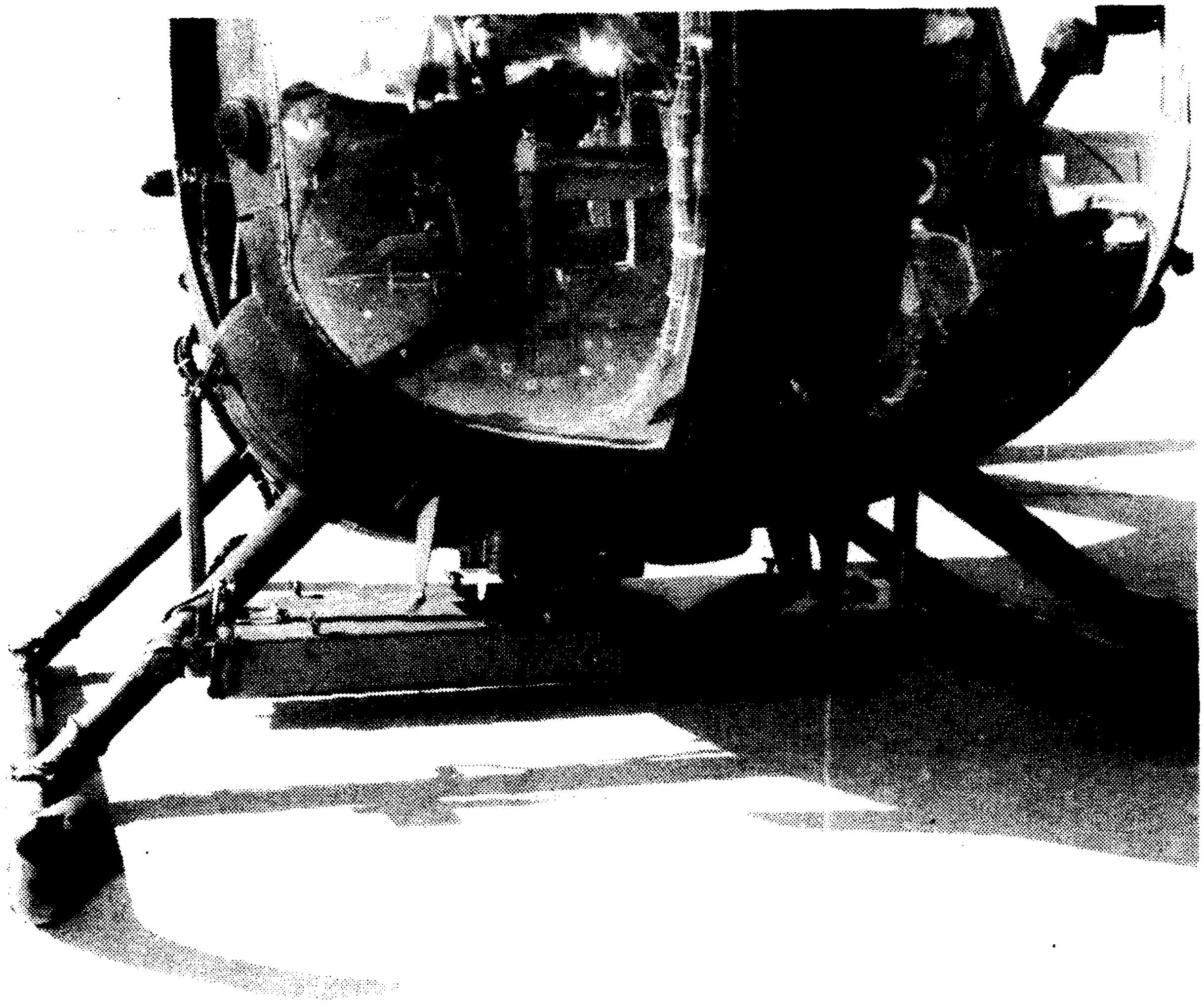


Figure B-18. Ballast Box

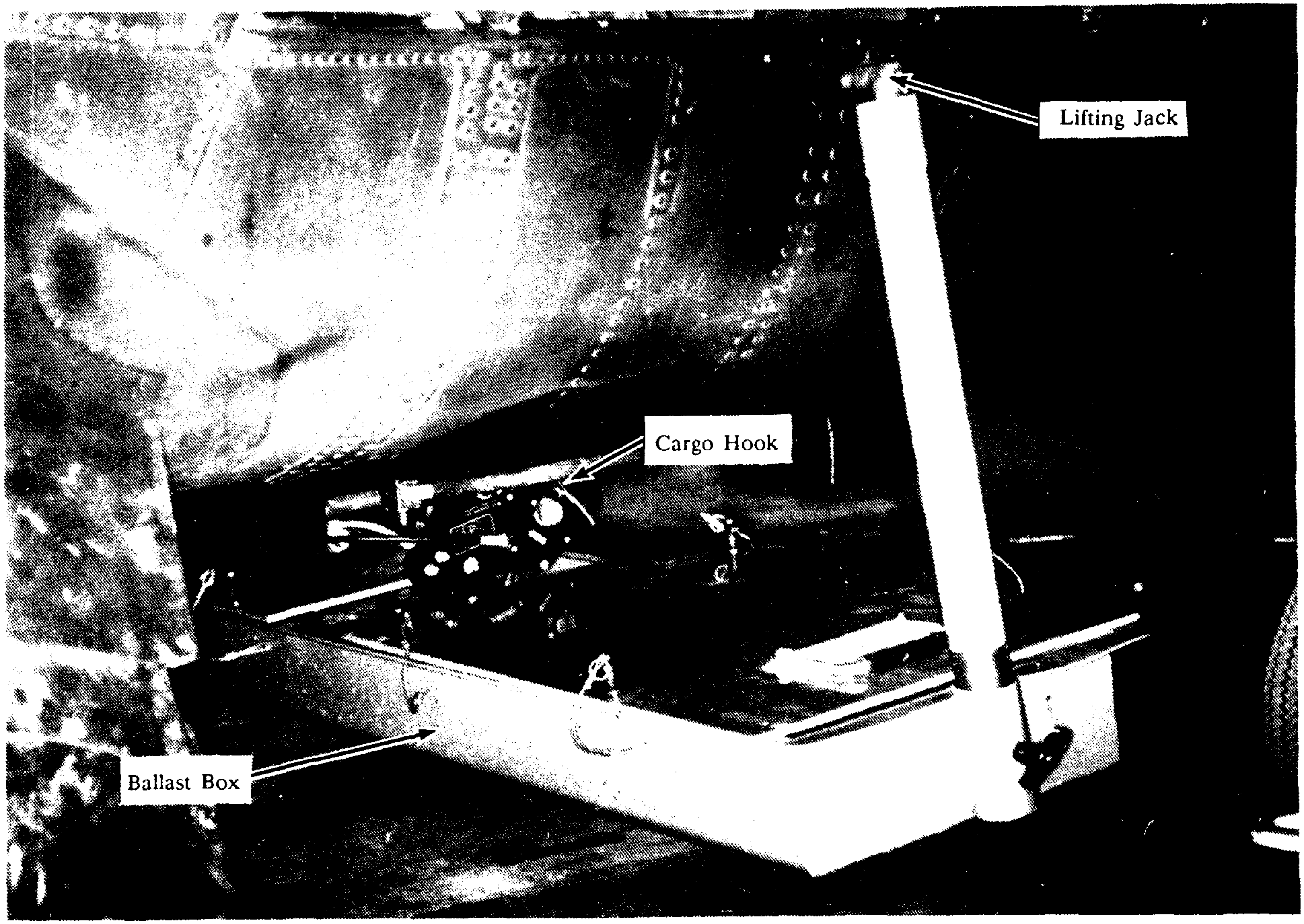


Figure B-19. Ballast Box Installation

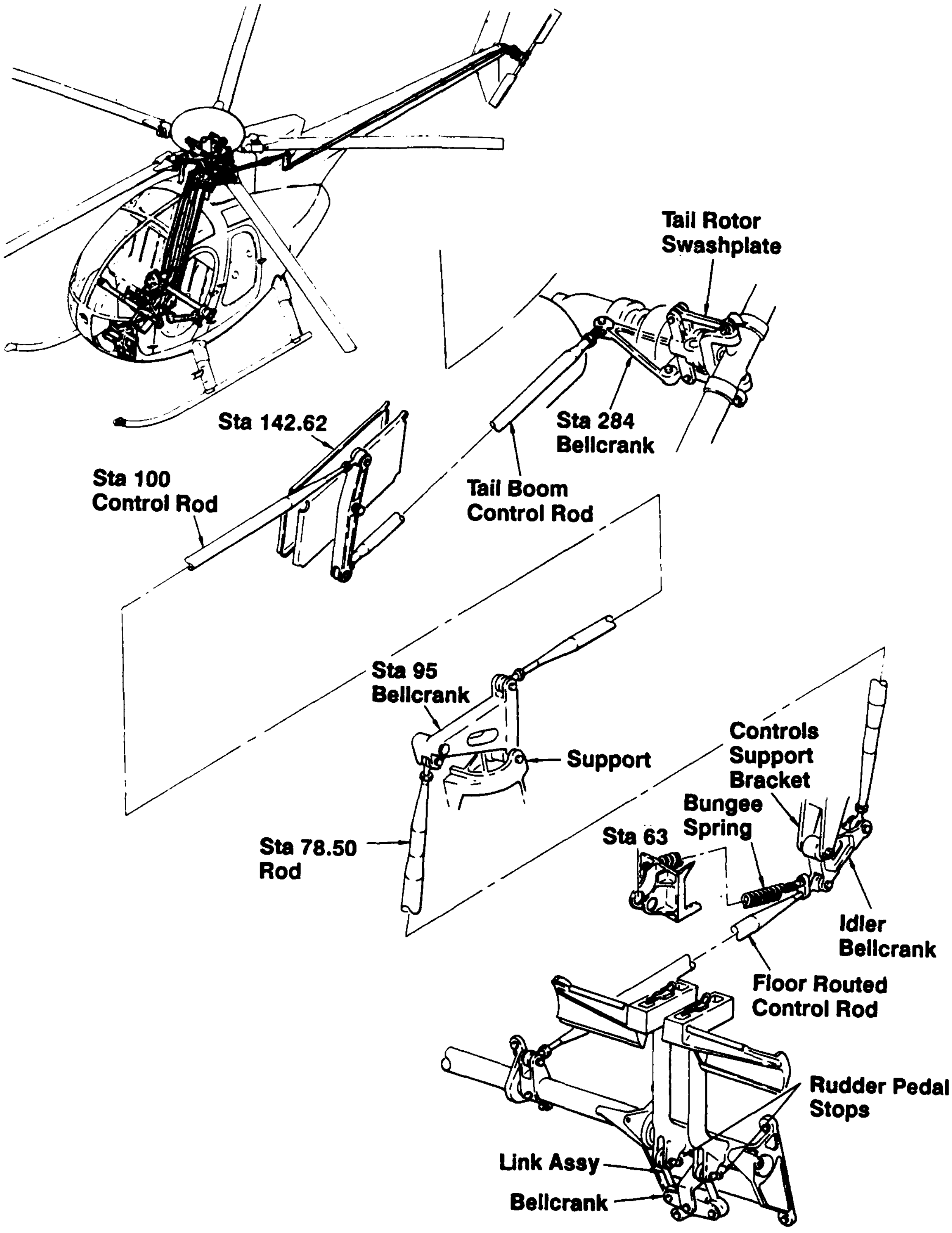


Figure B-20. Tail Rotor Control System

Cyclic Stick

12. The cyclic stick depicted in figure B-21, provides cyclic control of the main rotor system to control lateral and longitudinal movement of the aircraft. The cyclic control head incorporates the five position trim switch, radio and ICS switch, gun trigger switch, rocket fire switch, cargo hook release switch, a manual cargo release handle, gun elevation/depression switch, and a night vision goggle kill switch (fig. B-22). Two friction devices as depicted in figure B-23 adjust lateral and longitudinal forces.

One-way Lock Control System

13. The one-way lock of the cyclic control system is located in the longitudinal control linkage within the pilot seat structure. The one-way lock control system is an essentially self contained, closed loop hydraulic unit, consisting of a check valve, relief valve and pushrod mechanism. The check valve is seated when longitudinal control force originated by main rotor tends to move the cyclic in an aft direction. Seating the valve is designed to prevent unwanted aft movement of the cyclic and shunt feed-back force to the helicopter structure. Should the check valve freeze in the valve closed position, a force of approximately 30 pounds is necessary to open the relief valve and bypass the check valve.

Cyclic Trim System

14. A cyclic trim system is incorporated in the cyclic controls and is designed to counter-act feedback forces from the main rotor and compensate for unbalanced forces. The trim system is composed of the trim switch, two trim actuators, housing support, trim tube and a spring assembly. Cyclic trim is controlled by the cyclic trim switch on top of the cyclic stick grip (fig. B-24). The cyclic trim switch has five positions: OFF at the center, and spring loaded forward, aft, left, and right. When the trim switch is moved off the center position to any of the four trim positions, one of the trim motors operates to provide trim spring force in the desired direction. Trim forces cannot be applied in two directions simultaneously. When both lateral and longitudinal trim changes are desired it is necessary to apply first one then the other.

Collective Stick

15. The collective control system is operated by a collective stick, located to the left of each crewmember. The collective stick controls main rotor pitch to provide vertical movement of the aircraft and are depicted in figure B-25. The twist grip throttle and a control head are mounted on the collective (fig. B-26). The pilot's control head houses the N2 beep, search light ON/OFF switch, search light movement control, starter, and the clock reset switch. The clock reset switch was replaced with the pilot event on the test aircraft (fig. B-27). The co-pilot's control head houses the N2 beep switch only. Throttle and collective friction adjustment knobs are presented in figure B-28.

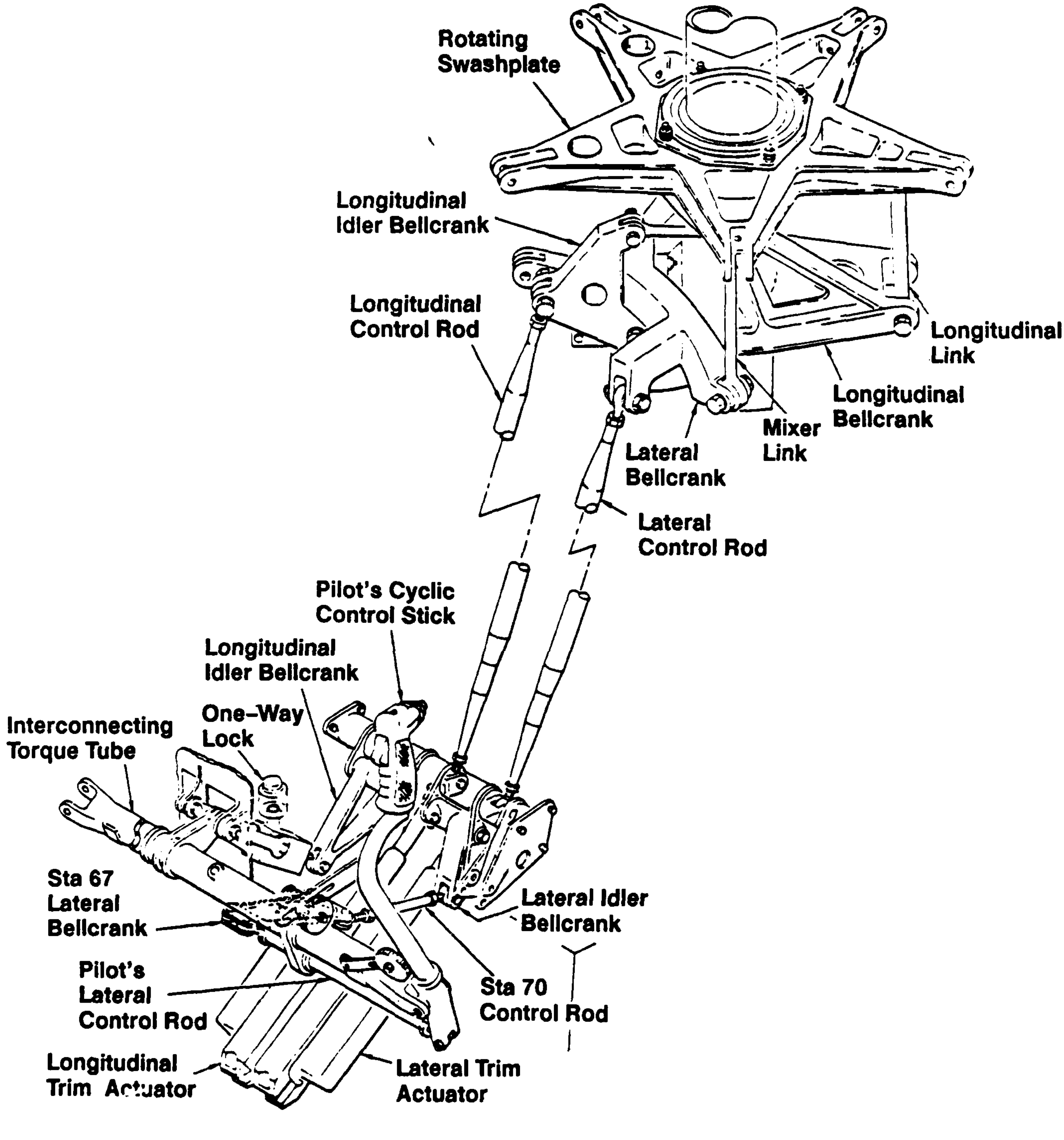


Figure B-21. Cyclic Pitch Controls

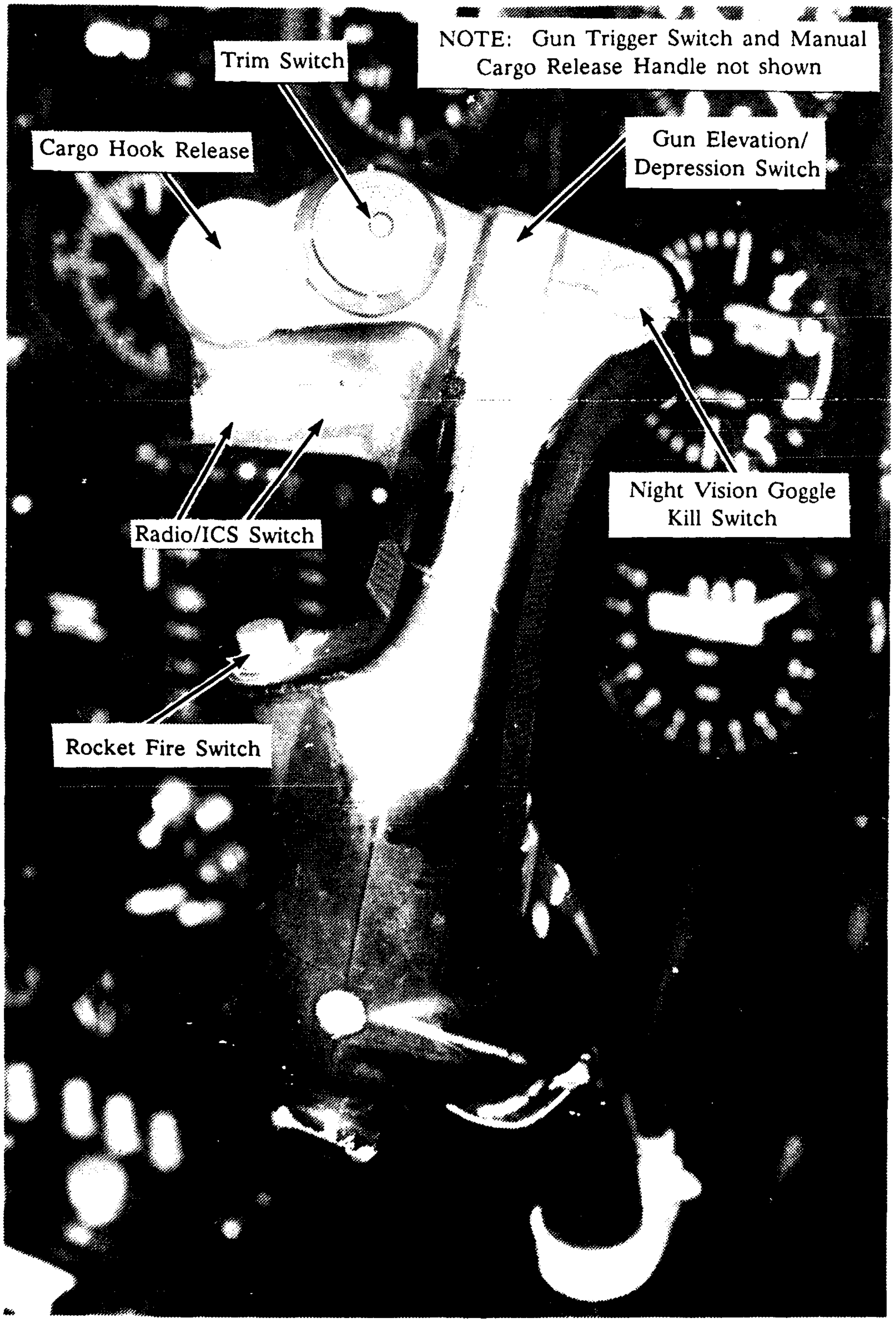


Figure B-22. Pilot's Cyclic Control Head

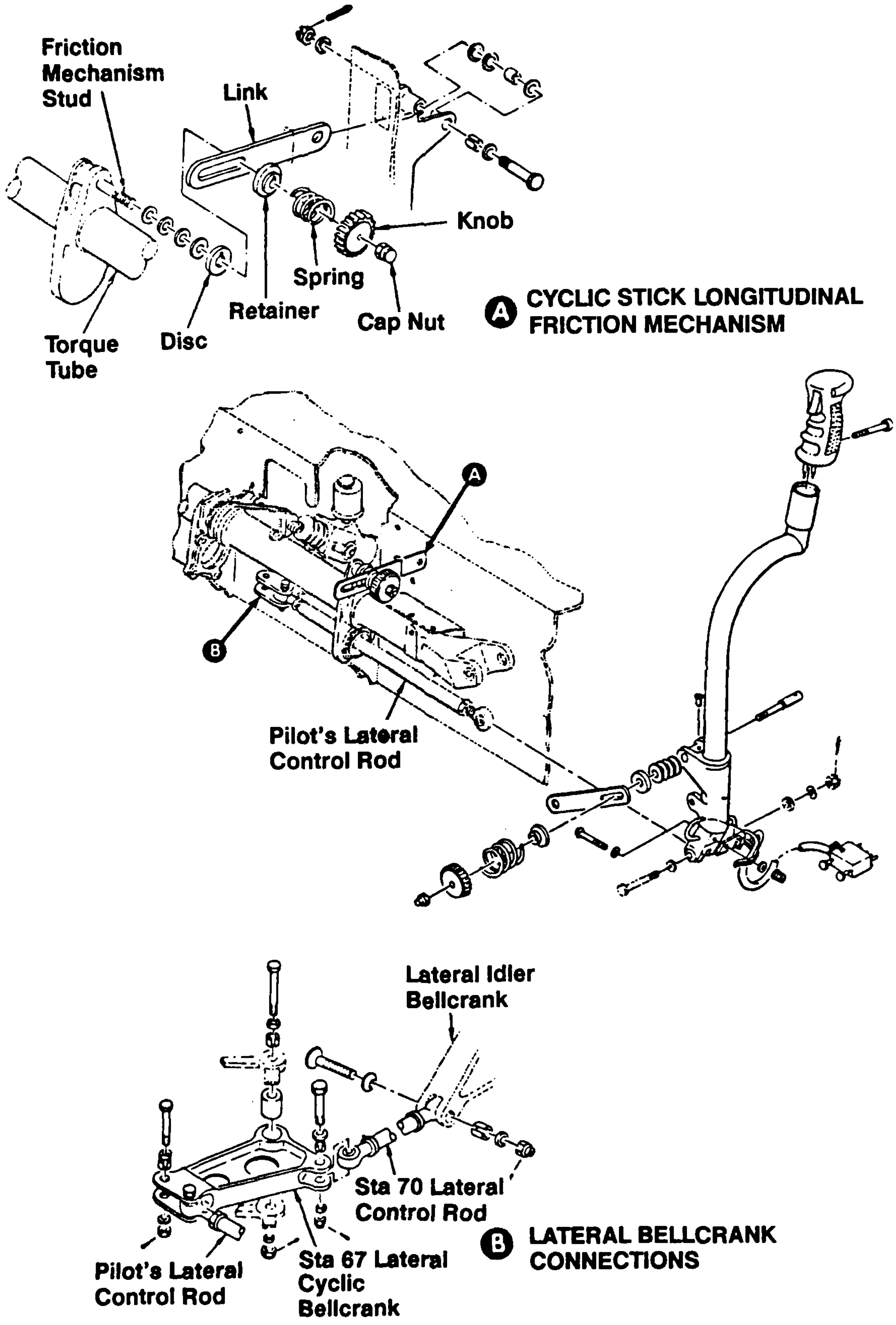


Figure B-23. Pilot's Cyclic Stick, Control Linkage and Friction Controls

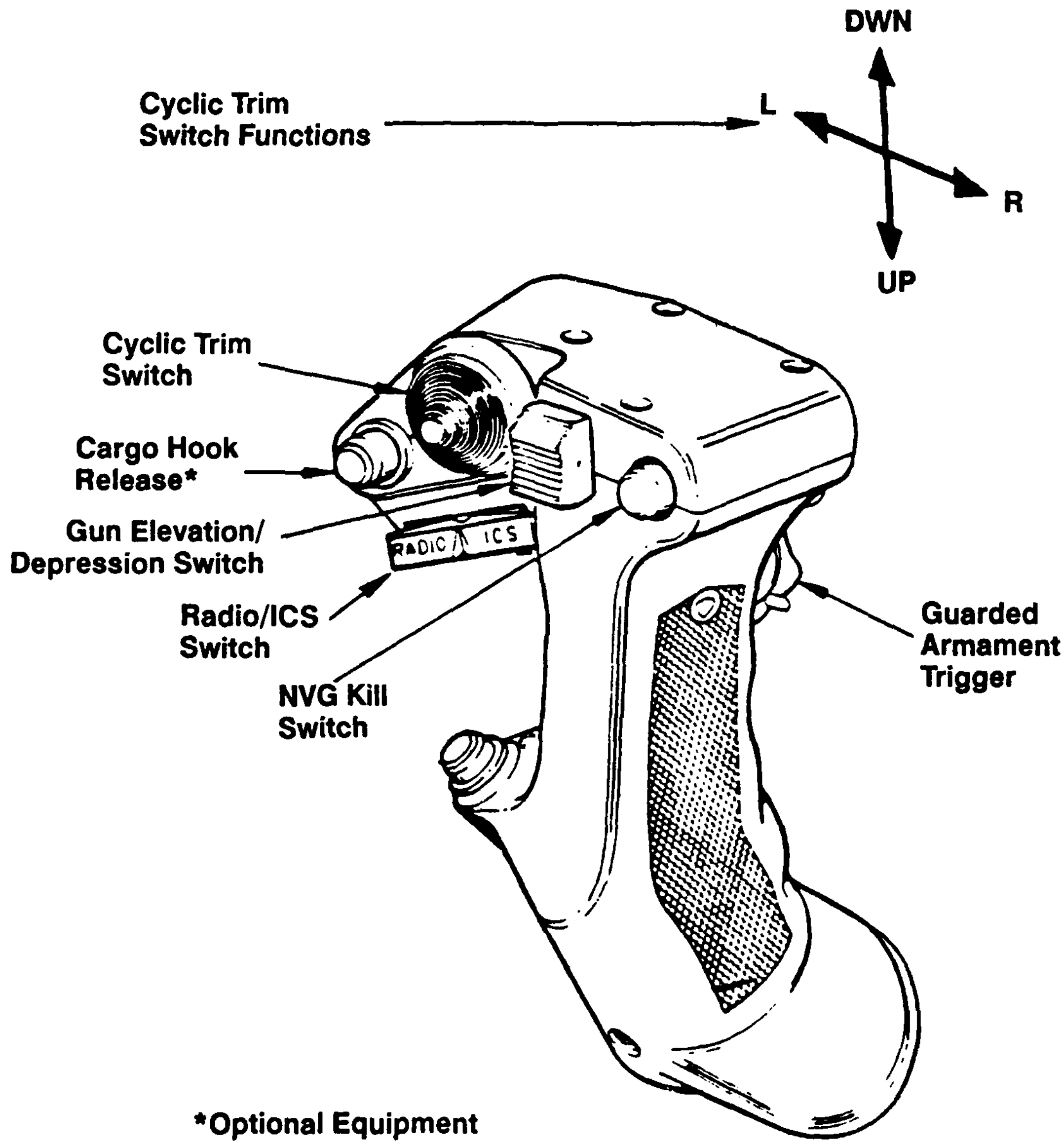


Figure B-24. Pilot's Cyclic Grip

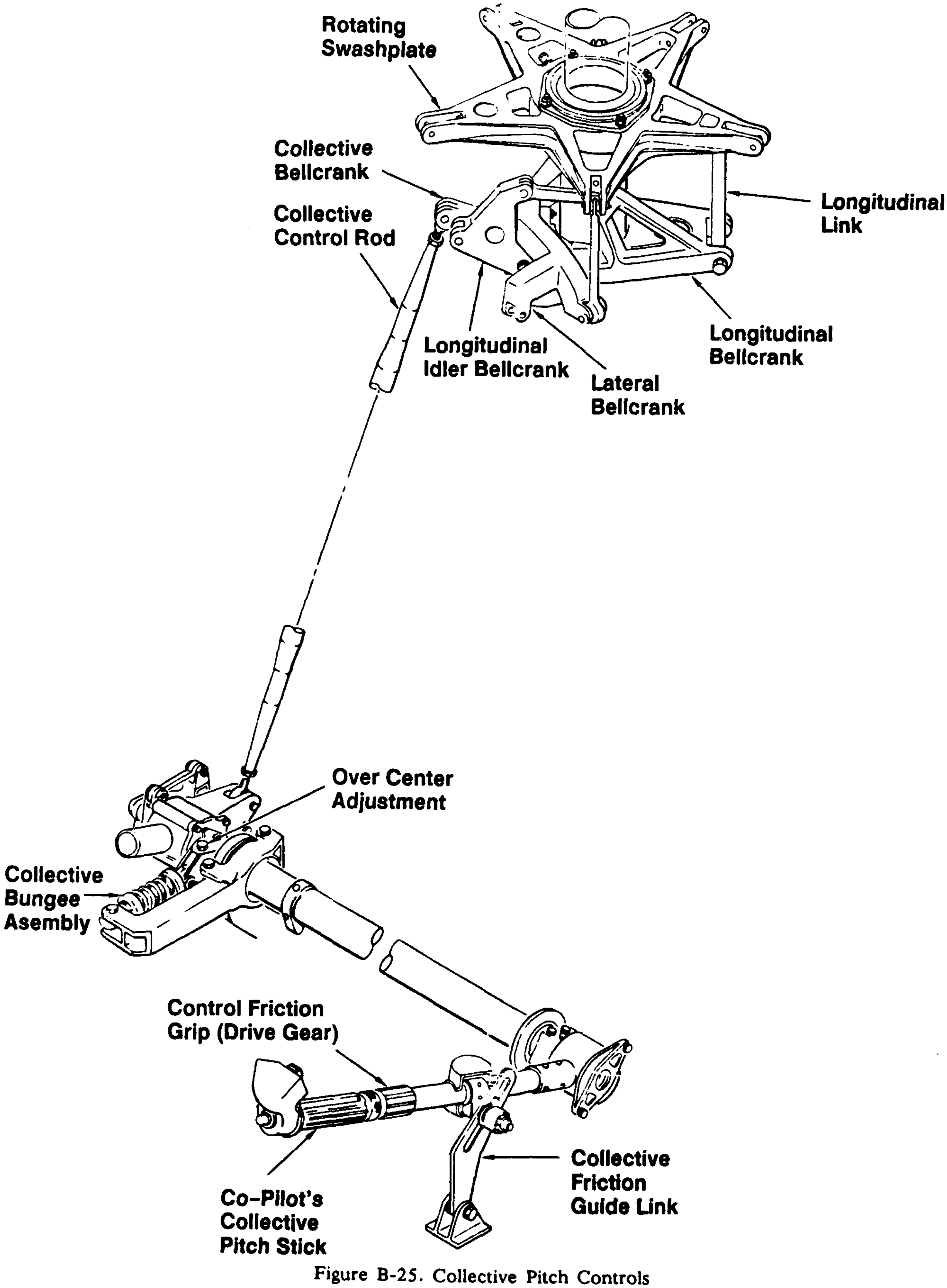


Figure B-25. Collective Pitch Controls

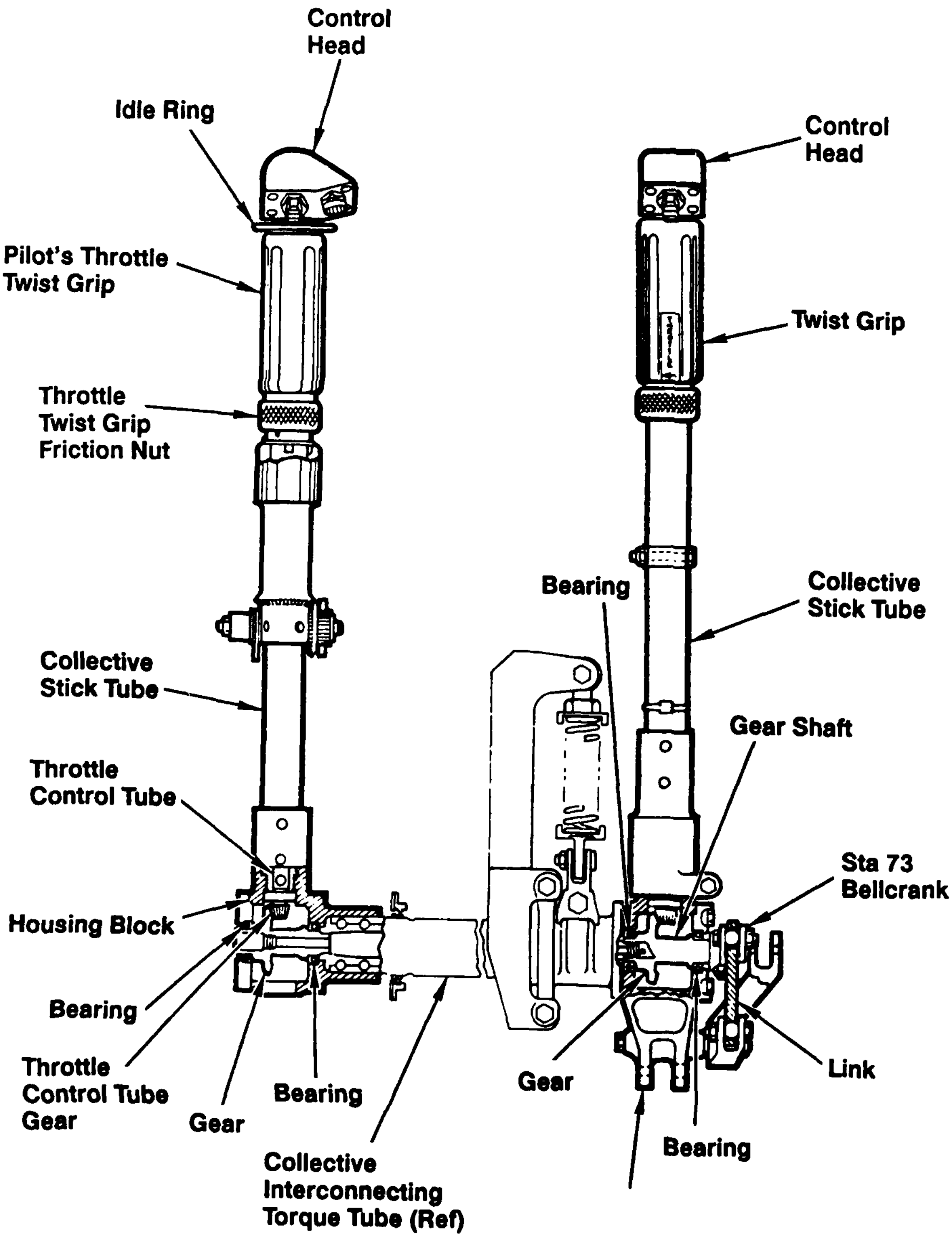


Figure B-26. Dual Collective Pitch Stick and Throttle Control Details (269 Series)

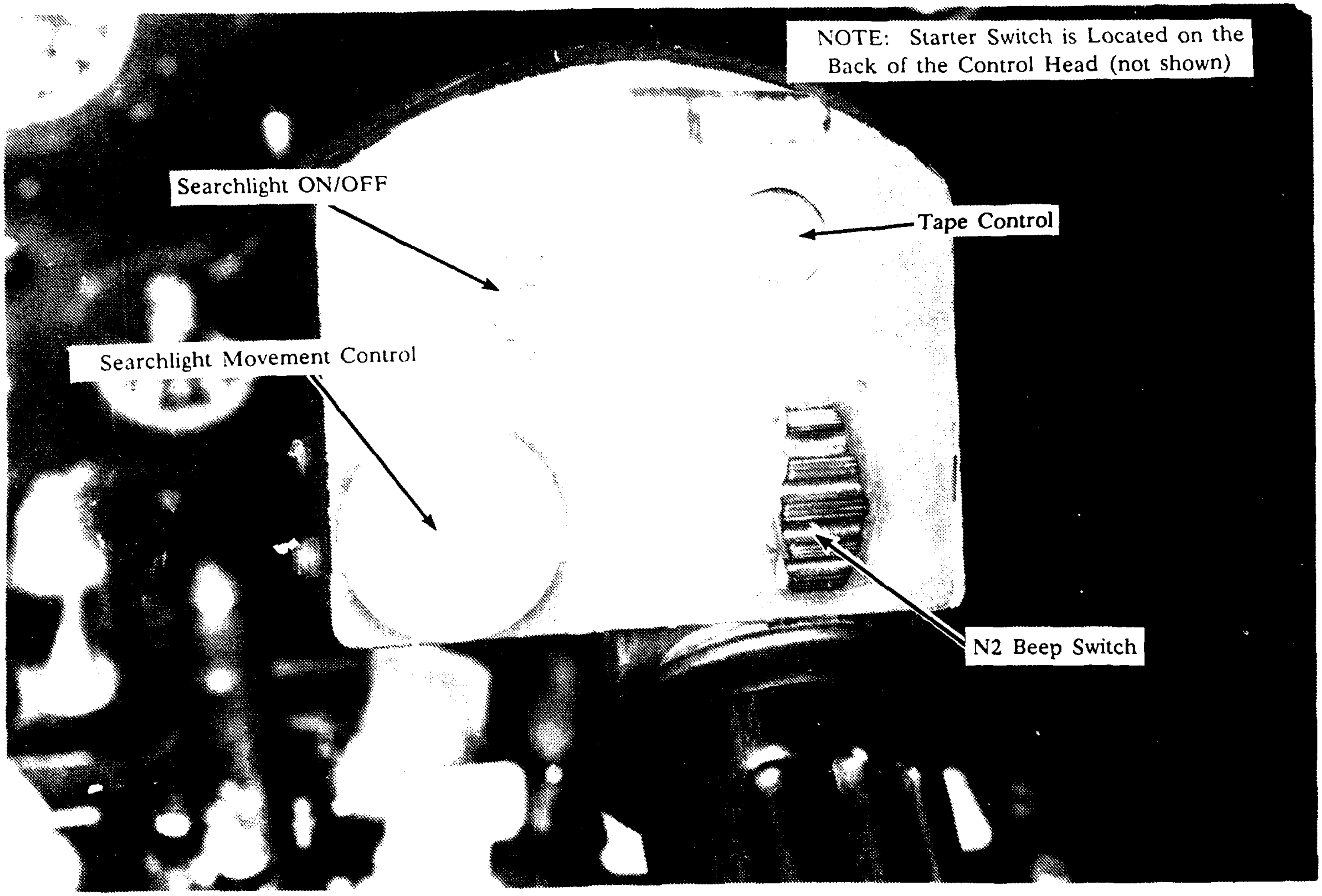


Figure B-27. Pilot's Collective Stick Control Head

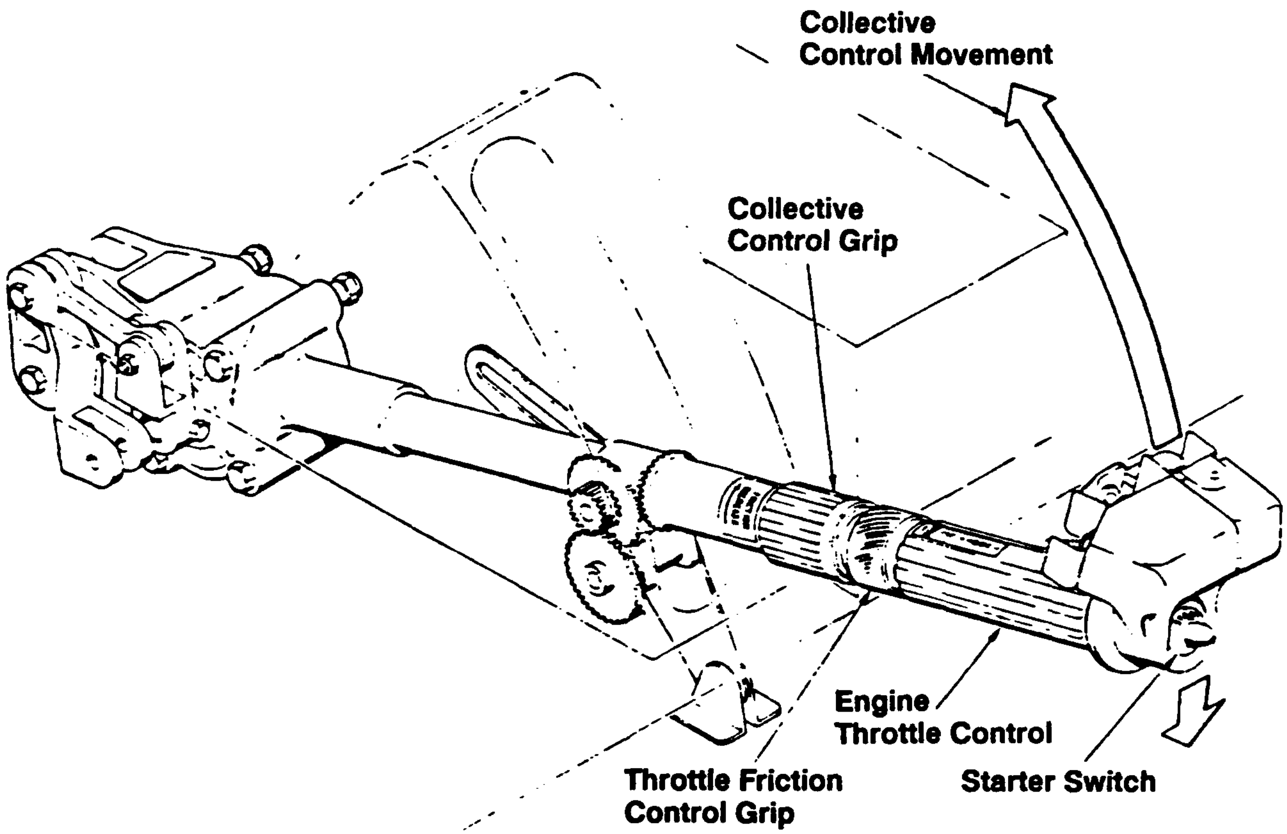


Figure B-28. Pilot's Collective Pitch Control Stick

Collective Bungee

16. The collective bungee system as depicted in figure B-29, is designed to help maintain selected collective pitch stick position in flight by counter-acting forces fed back into the collective stick from rotor forces and combined unbalanced control system forces.

MAIN ROTOR SYSTEM

General

17. The main rotor group consists of the five main rotor blades, a fully articulated main rotor hub assembly with offset flapping hinges, a scissors assembly, and a swashplate and associated mixer control mechanisms. The main rotor blades are secured to the rotor hub assembly with laminated steel straps, standard hardware and quick release lever type pins. The main rotor assembly is shown in figure B-30.

Main Rotor Blades

18. Each of the five main rotor blades is a NACA 0015 airfoil consisting primarily of a wraparound, aluminum alloy skin bonded to an extruded aluminum alloy spar, an upper root fitting and a lower root fitting. The blades are depicted in figure B-31. Dimensional and airfoil data are provided in paragraph 32. Two preset balance weights are installed in the tip end of each blade. A removable forward tip cap, at the outboard end of each blade, is replaced with a tracking cap when performing main rotor blade tracking.

Main Rotor Hub

19. The main rotor hub depicted in figures B-32 through B-38, consists of a central hub, five identical pitch housings spaced 72 degrees apart horizontally around the hub with associated mechanisms and linkages. Lead-lag links, a lead-lag damper, a droop stop striker strip and spacer, and a pitch control bearing with each pitch housing produce the pivoting axis, blade flapping stop contact surfaces and lead-lag hinge function for the rotor blades. Five laminated retention strap assemblies that are flexible both vertically and torsionally extend through the pitch housings and connect to the lead-lag links. A lower shoe, attached to the central hub, contains a droop stop ring and droop restrainers that support the blades at rest and distribute droop loads at low blade rpm.

Rotor Brake

20. The Hughes Rotor Brake Kit Part No. 369H90123-61 was installed and is designed to substantially reduce rotor coastdown time following engine shut down. The rotor brake consists of a handle in the cockpit which actuates a master cylinder which is hydraulically connected to a disc brake mechanism mounted on the main transmission output shaft to the tail rotor drive system. A pressure relief system limits the amount of hydraulic pressure that may be applied to the brake.

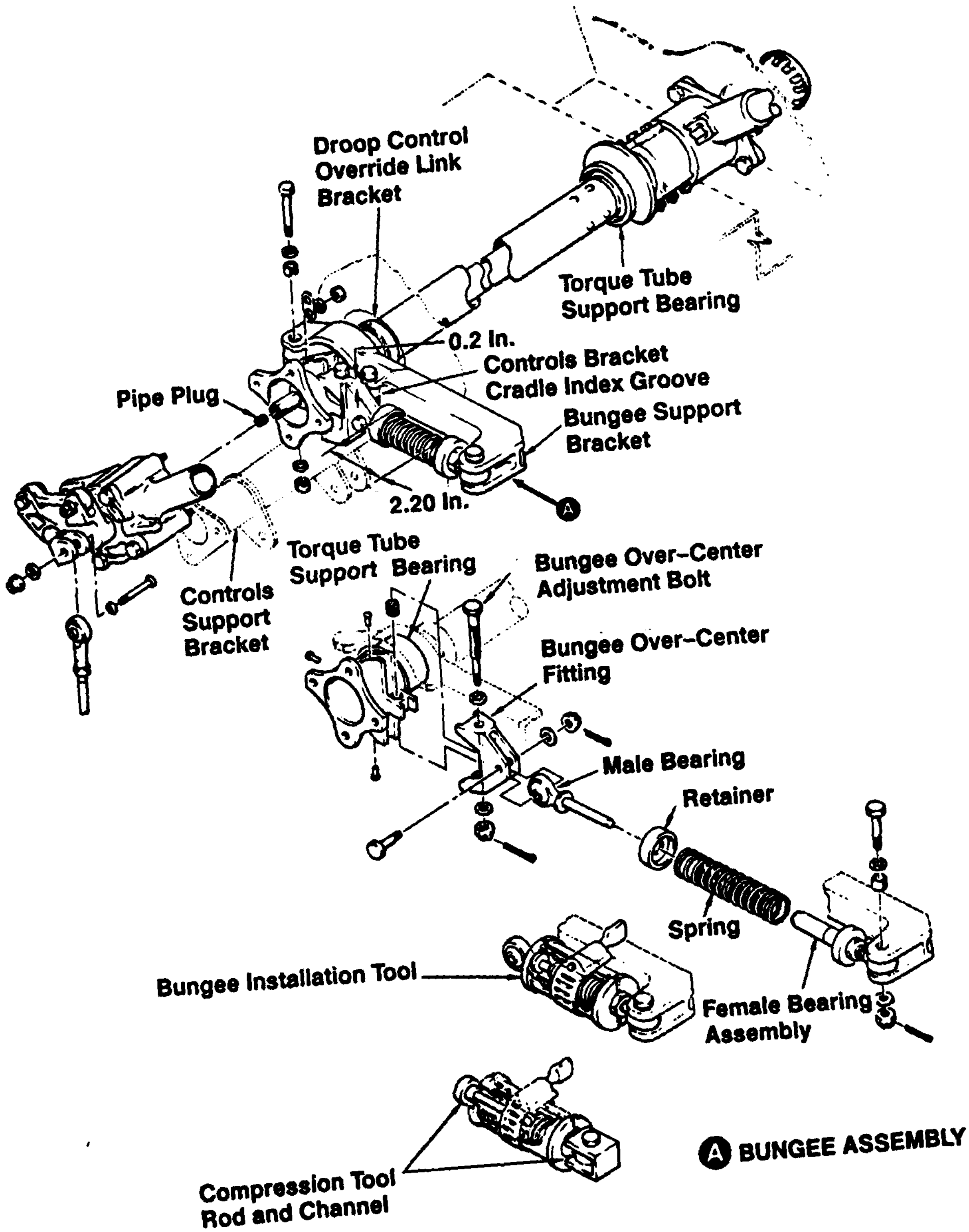


Figure B-29. Collective Torque Tube, Gas Producer Torque Tube, Collective Bungee

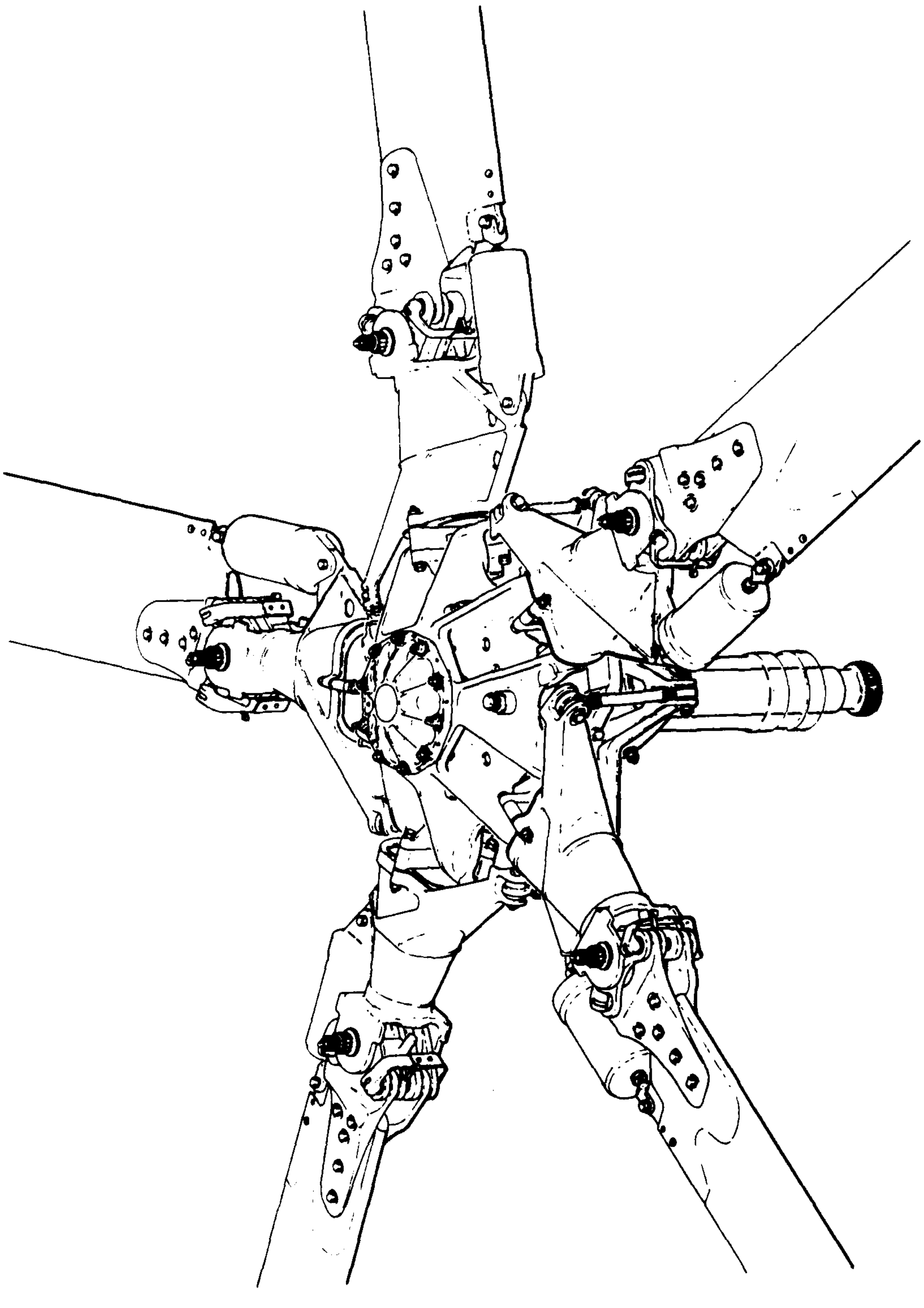


Figure B-30. Main Rotor Assembly

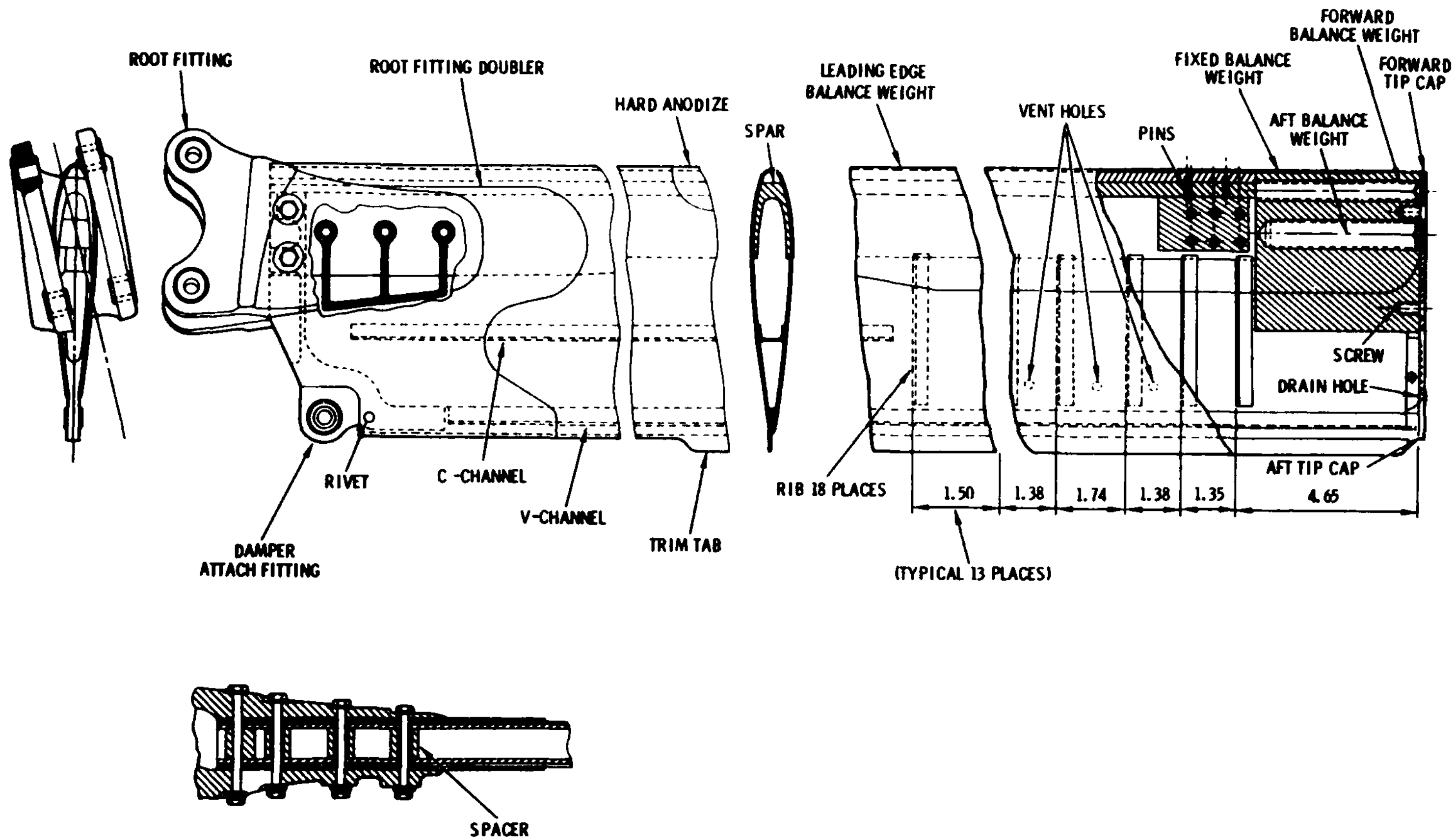


Figure B-31. Main Rotor Blade

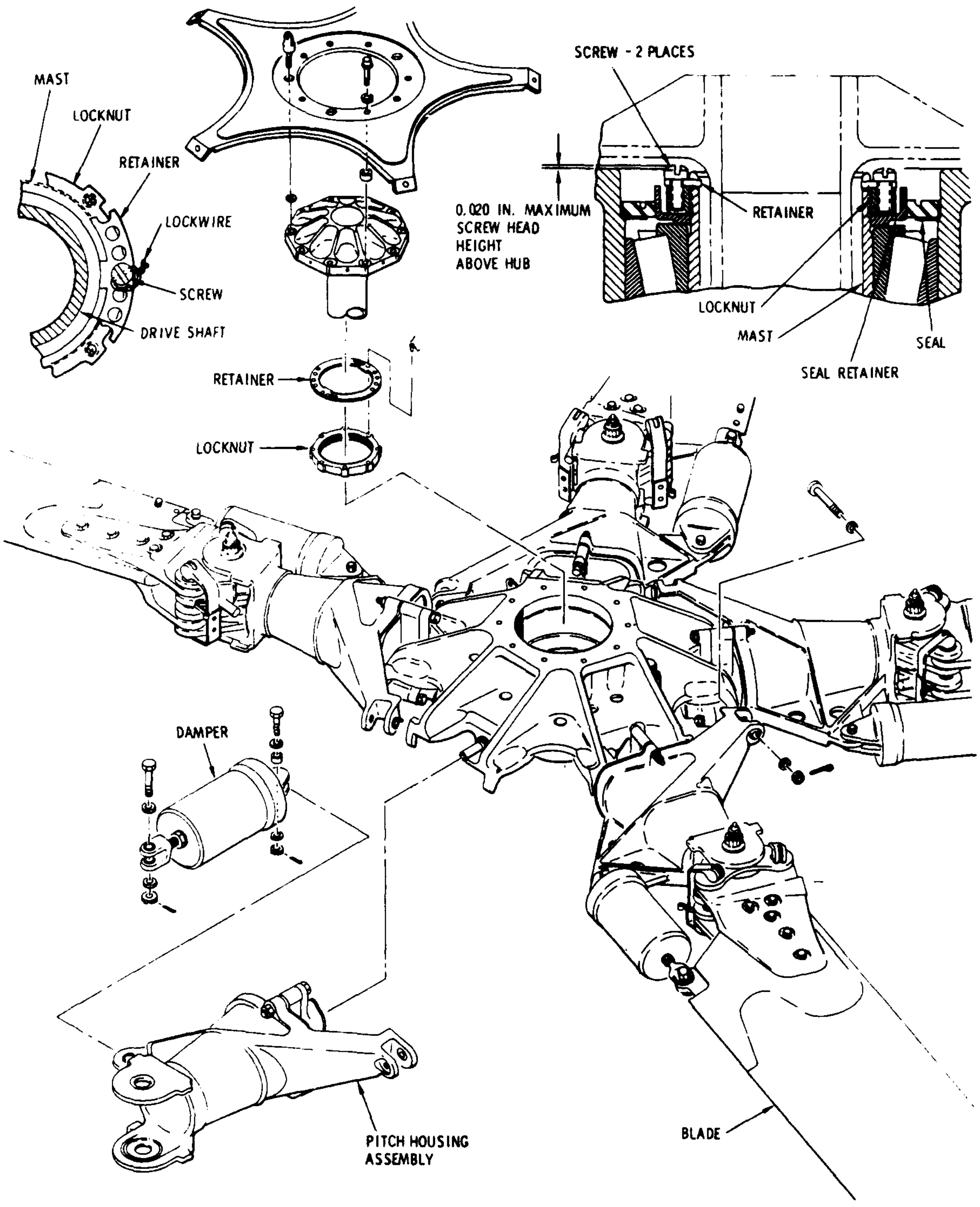


Figure B-32. Main Rotor Assembly, Exploded

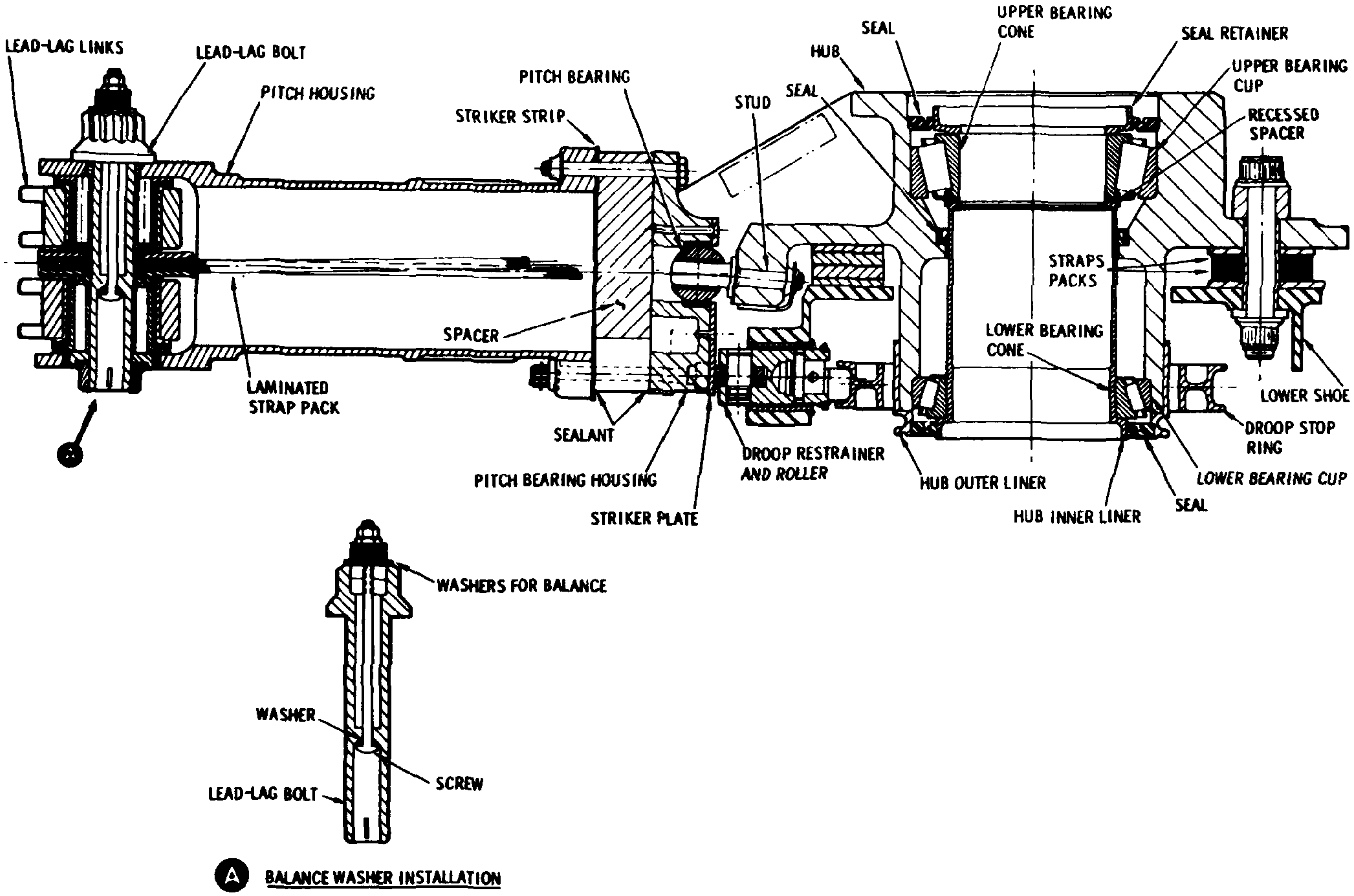


Figure B-33. Main Rotor Hub

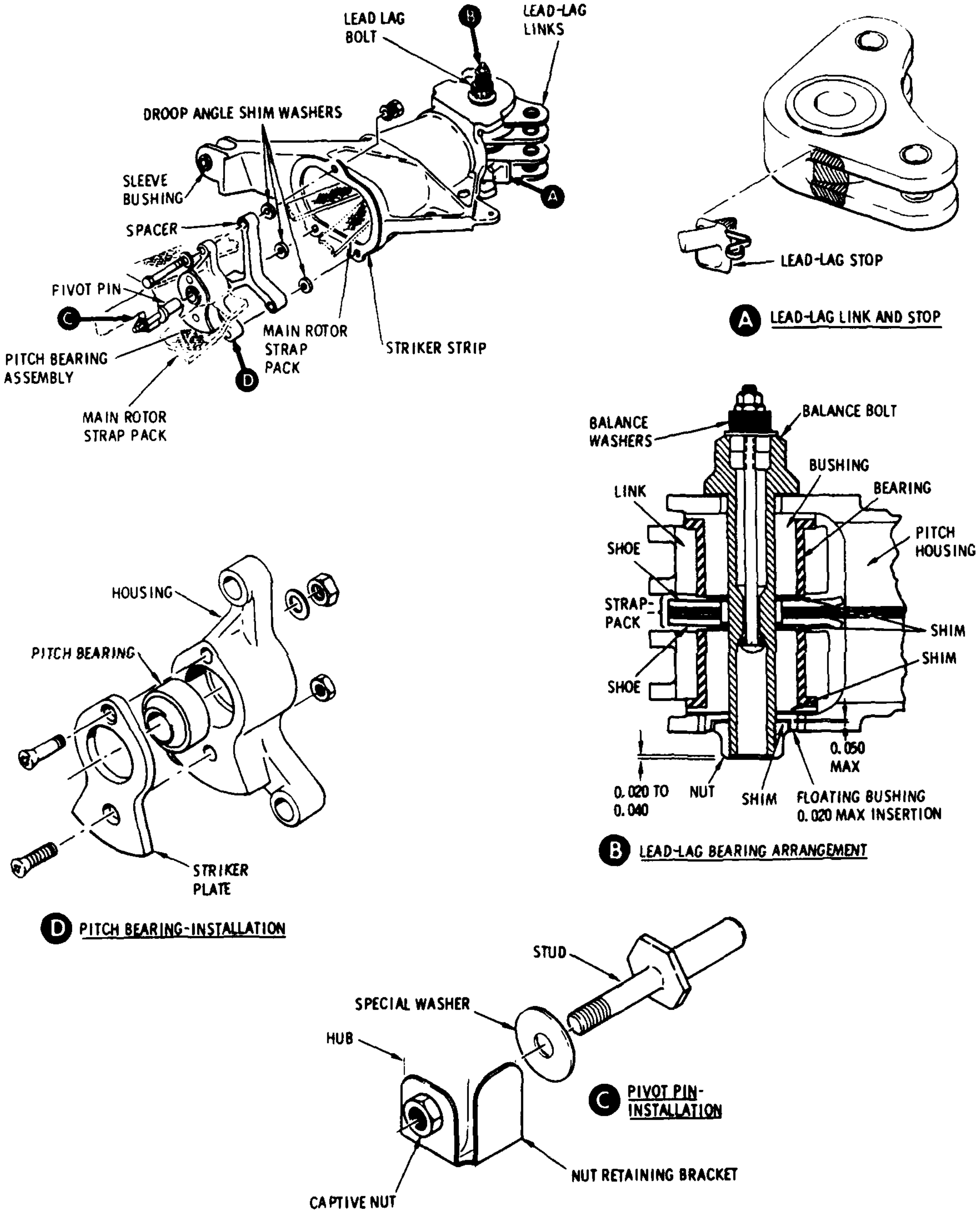


Figure B-34. Pitch Housing Components

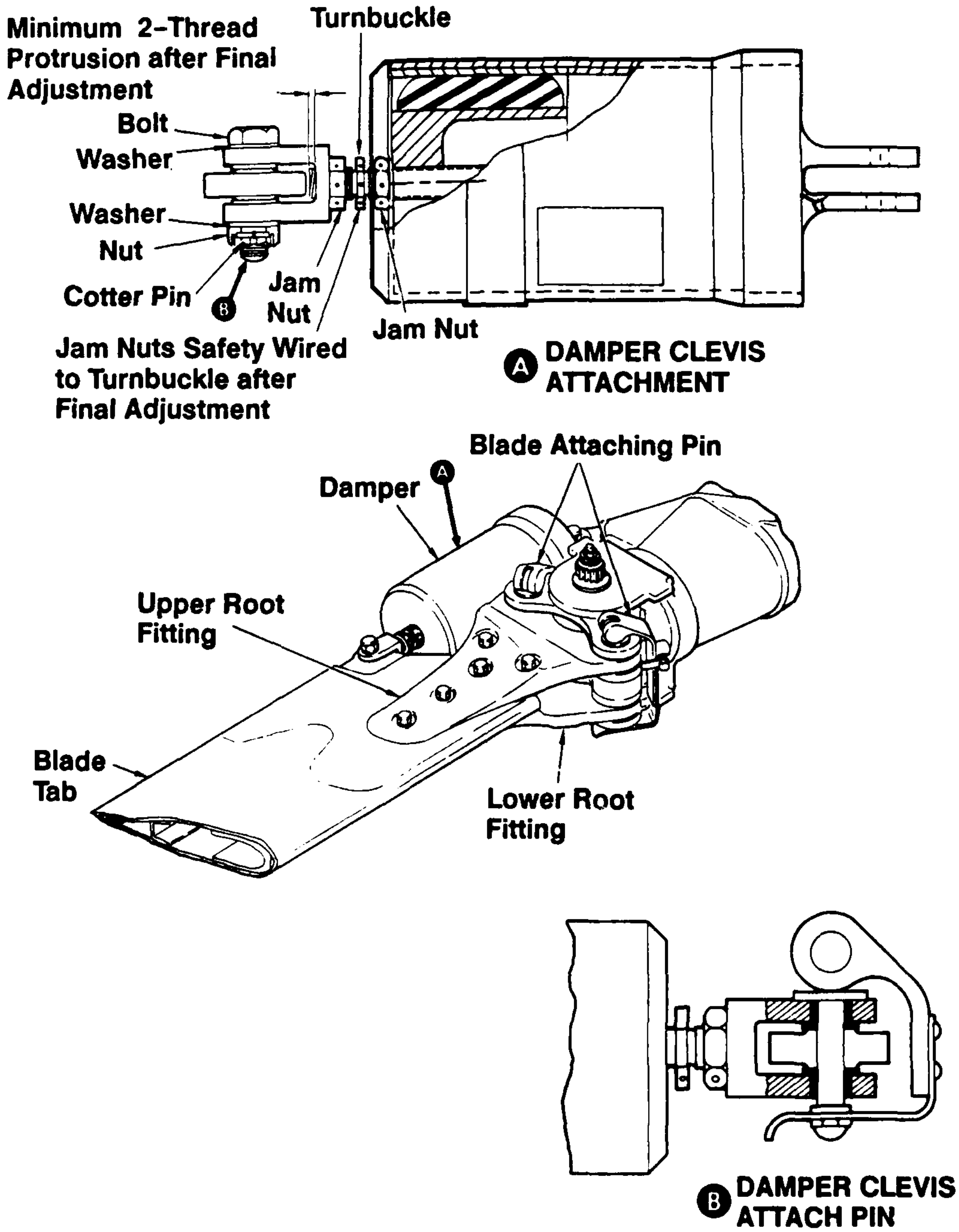


Figure B-35. Main Rotor Blade Dam

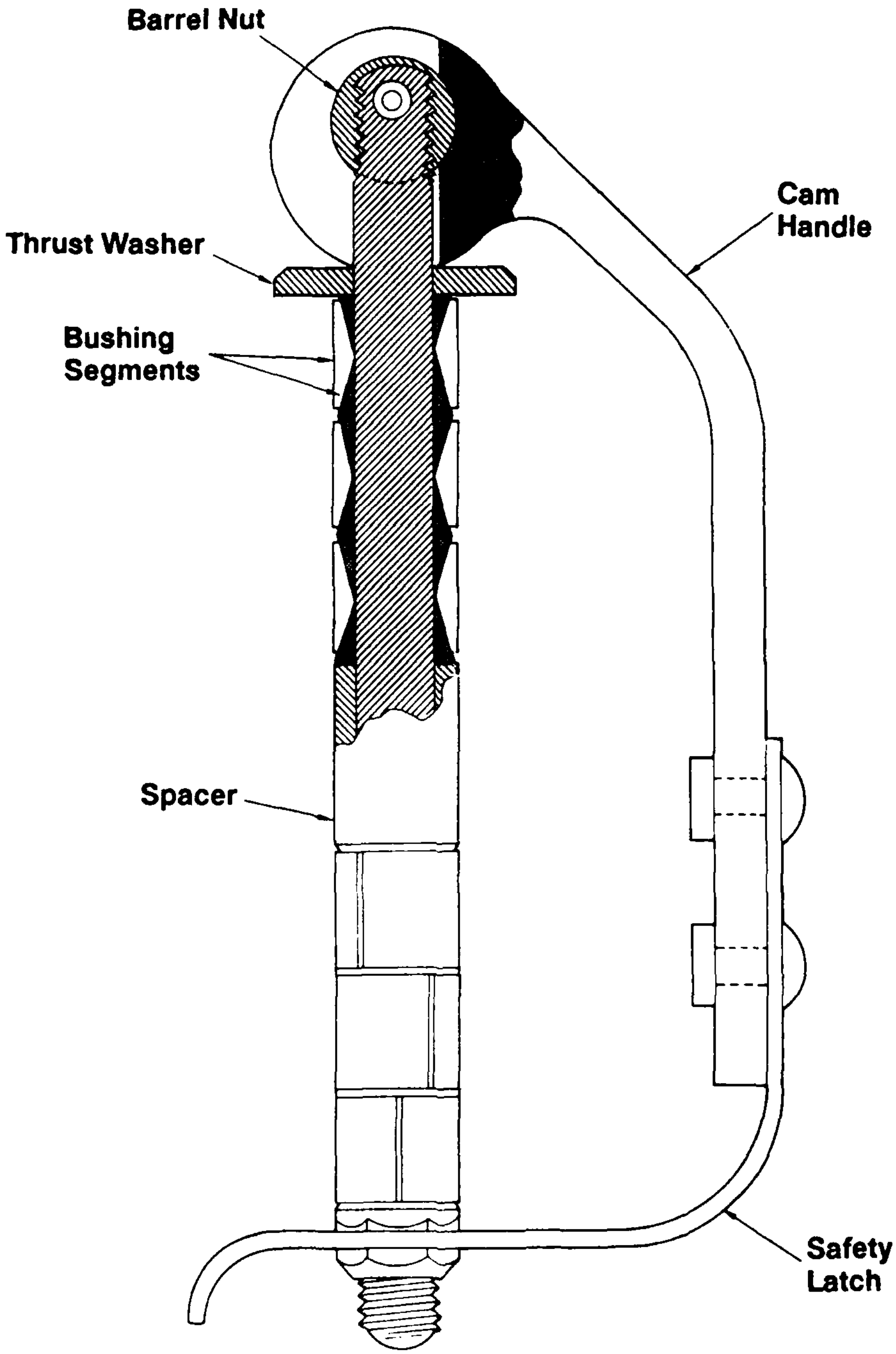


Figure B-36. Blade Attaching Pin

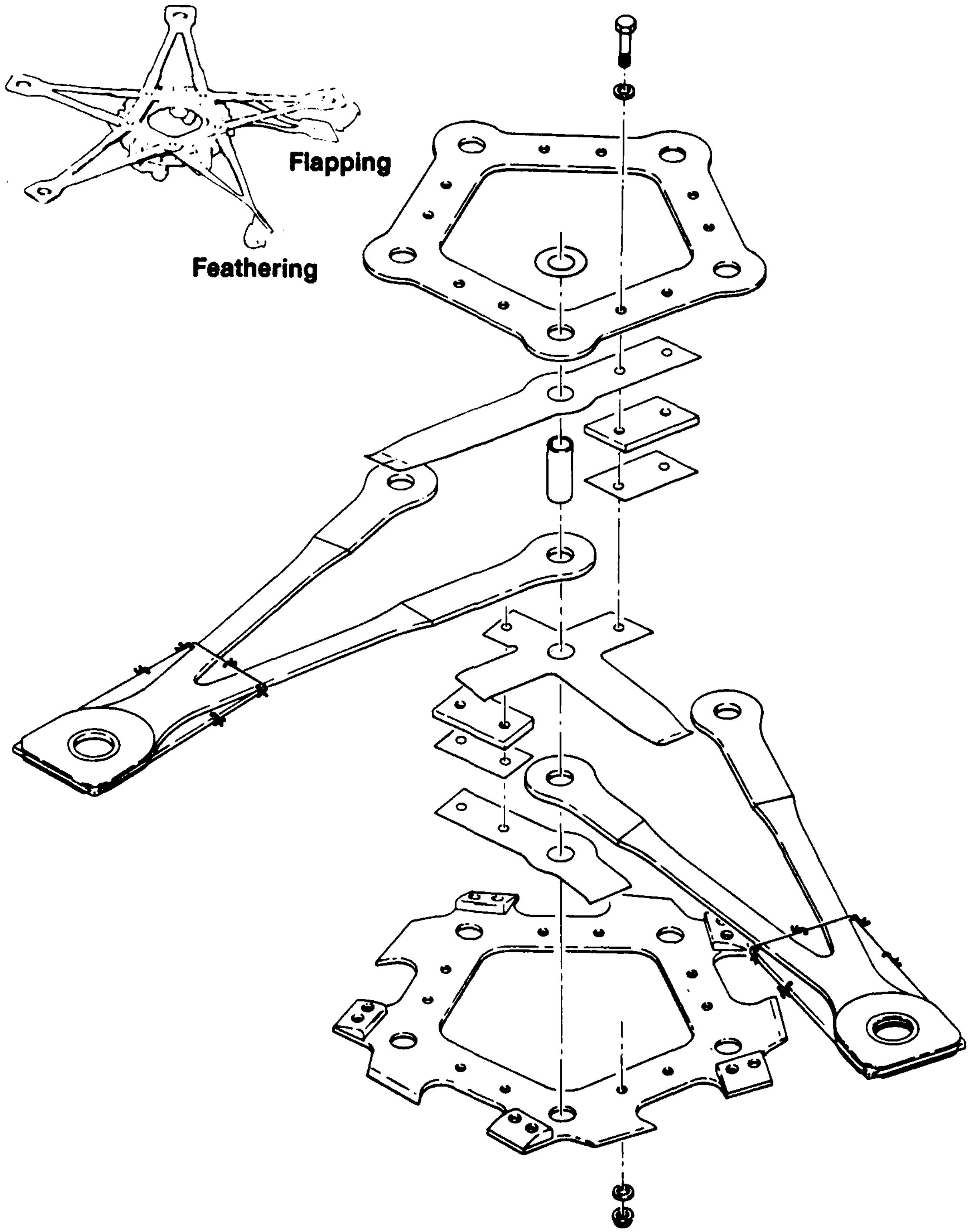


Figure B-37. Strap Pack

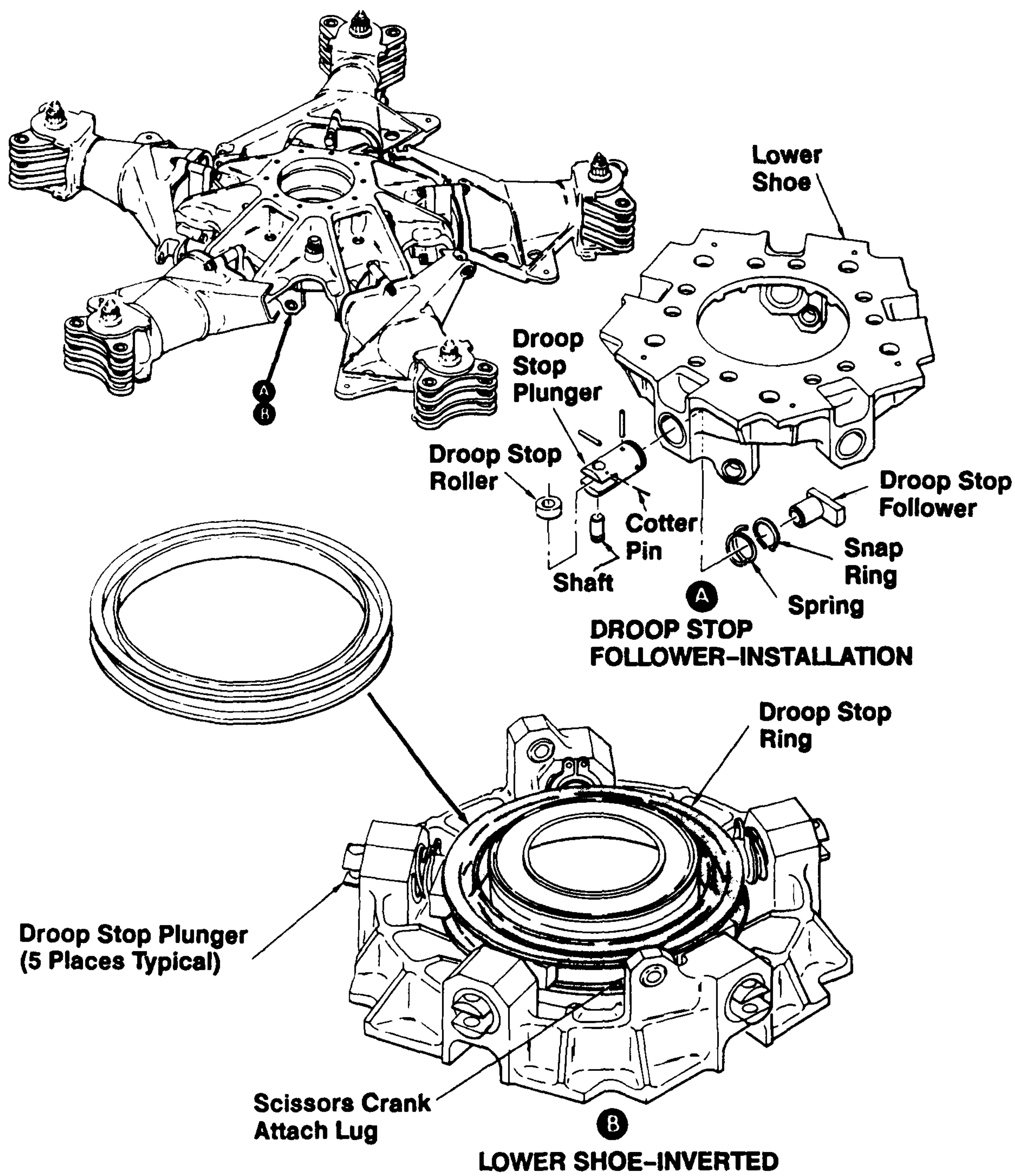


Figure B-38. Droop Stop Components

TAIL ROTOR SYSTEM

General

21. The tail rotor, mounted on the tail rotor transmission at the end of the tailboom, counteracts main rotor torque and controls the yaw axis of the helicopter. The rotor consists of two variable pitch blades mounted on a teetering hub. The tail rotor control system changes the pitch of the tail rotor blades. The anti-torque pedals move a system of bellcranks and control rods routed through the fuselage and tailboom to a pitch control assembly which moves axially on the tail rotor transmission output shaft. Control linkage includes a bungee spring designed to relieve left pedal forces in flight.

Tail Rotor Assembly

22. The tail rotor assembly consists mainly of two tail rotor blades, a hub, drive fork, two pitch control links, and a pitch control assembly. The blades are held together on a hub by a laminated tension-torsion strap pack that permits the blades to rotate axially on the hub as shown in figures B-39 and B-40. The hub pivots on the drive fork. Control of the blade pitch is from the pitch control assembly through two pitch control links that connect to pitch arms on the blade root fittings.

Tail Rotor Blades

23. The tail rotor blades are shown in figure B-41. Each blade consists of an aluminum honeycomb spar, aluminum skin, riveted aluminum blade fittings and aluminum cap all bonded together.

POWER TRAIN SYSTEM

General

24. The power train system shown in figure B-42, consists of at the engine power takeoff pad, the overrunning clutch, drive shafts, and the main and tail rotor transmissions.

Main Transmission

25. The main transmission mounts under the main rotor mast support structure as shown in figure B-43. The transmission is a two stage speed reduction system. The first stage reduction is for the tail rotor drive system and accessory drive trains. The second stage is for further reducing rpm for the main rotor. The transmission housing is magnesium alloy. The accessory gear train drives a rotor tachometer generator and the transmission oil pump that are mounted on drive pads at the aft end of the transmission. The transmission is cooled by air drawn through a cooling blower and routed through the transmission oil cooler.

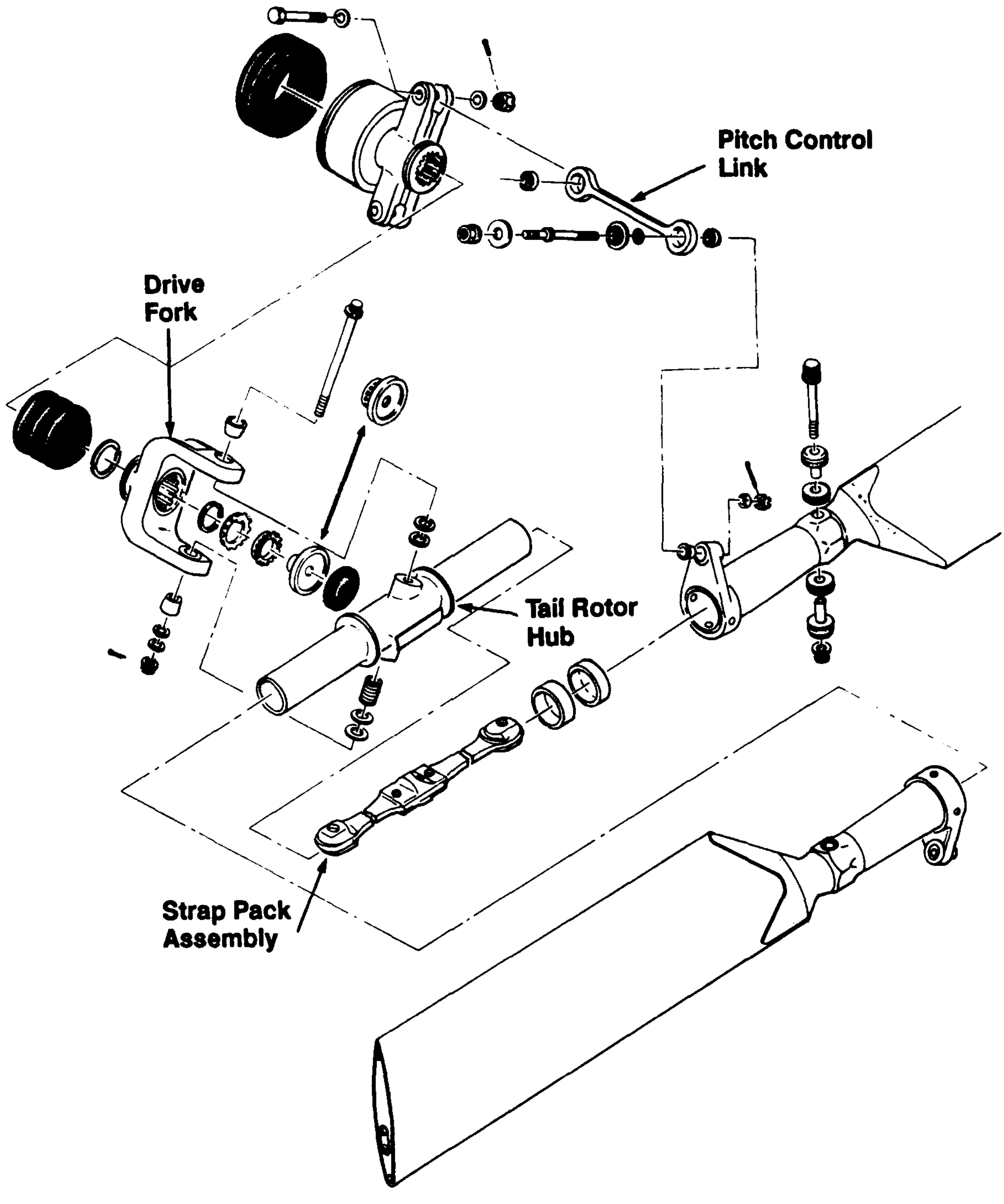


Figure B-39. Assembly, Tail Rotor

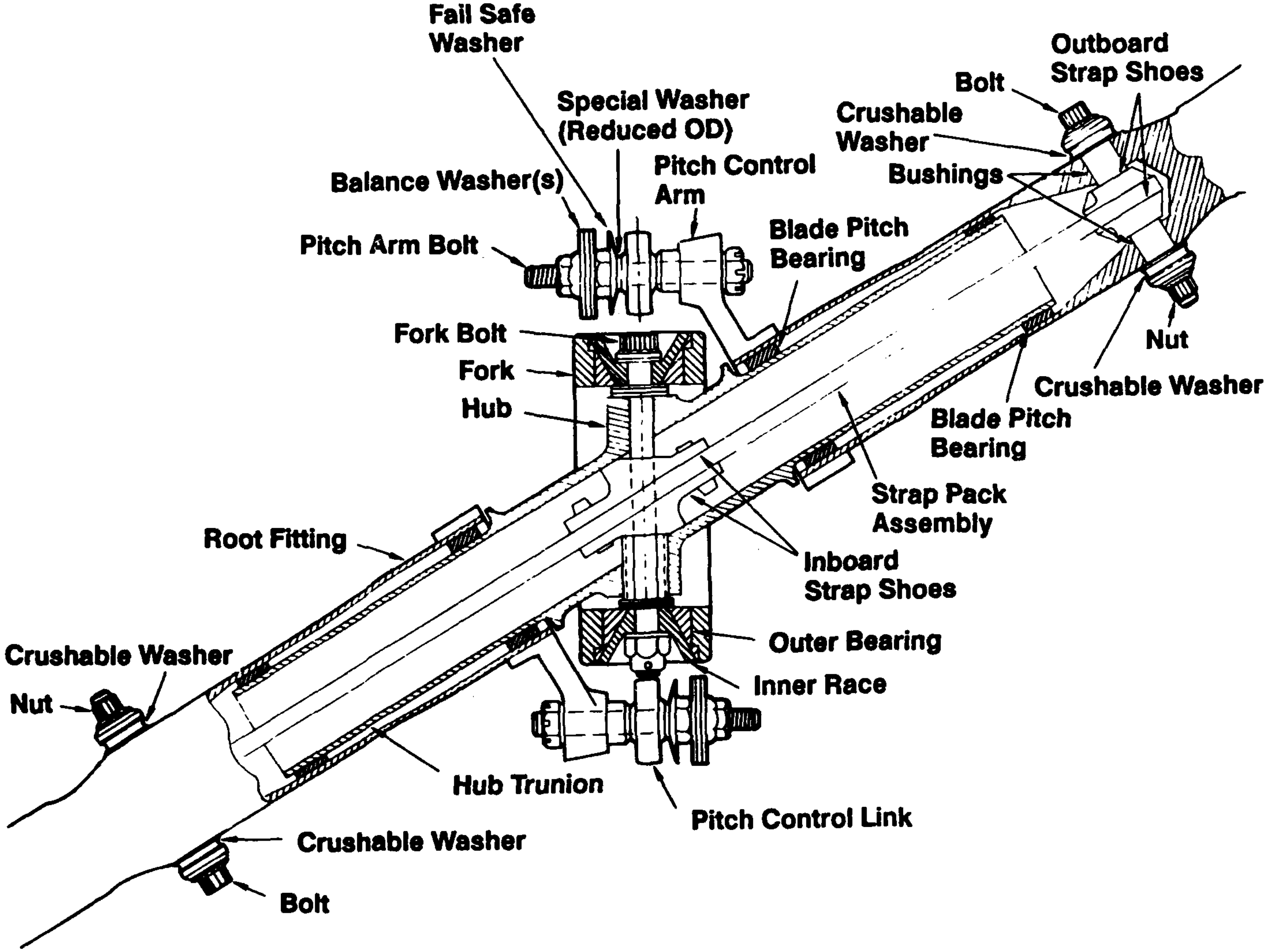


Figure B-40. Cross-Section, Tail Rotor Assembly

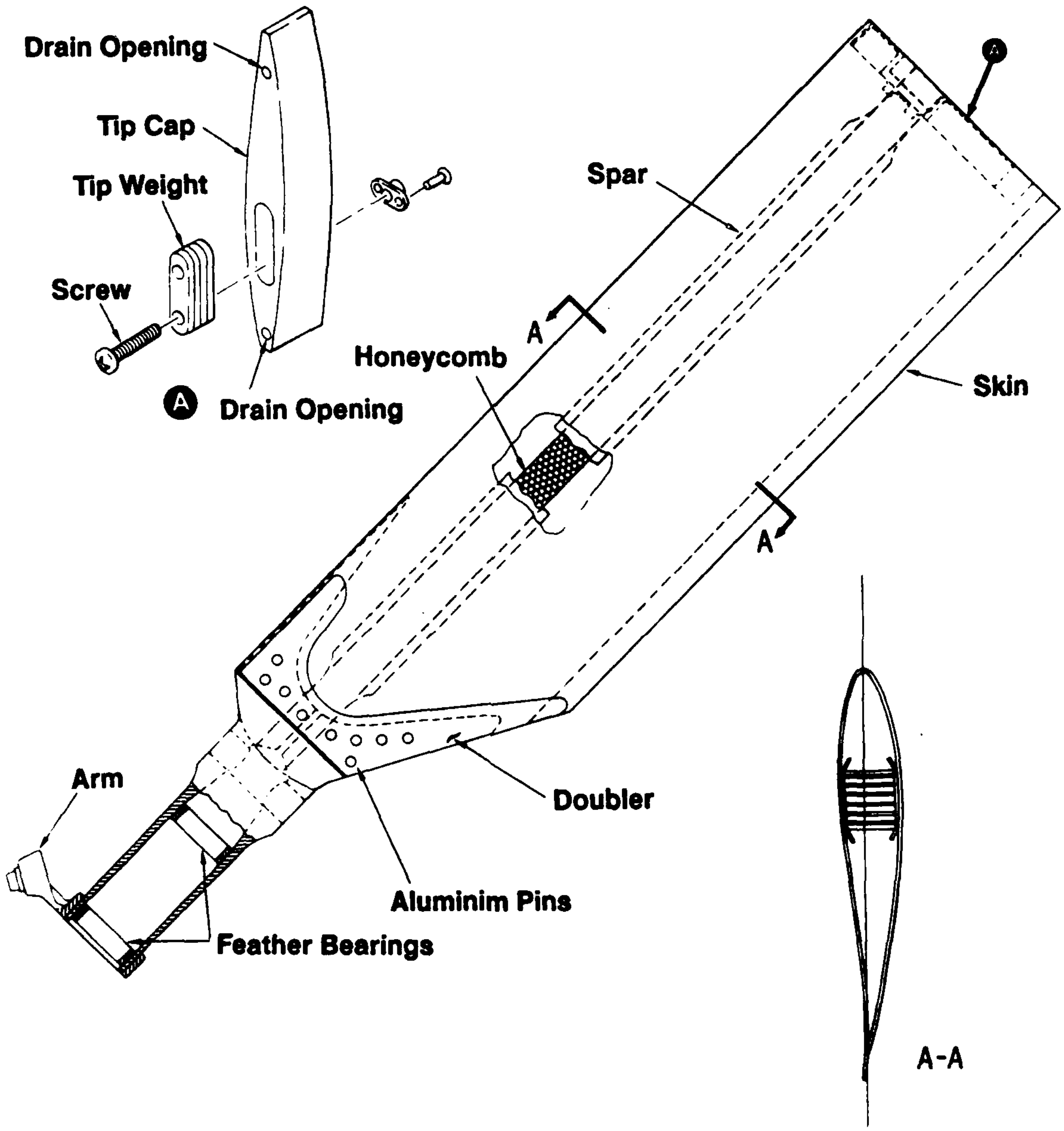


Figure B-41. Blade, Tail Rotor

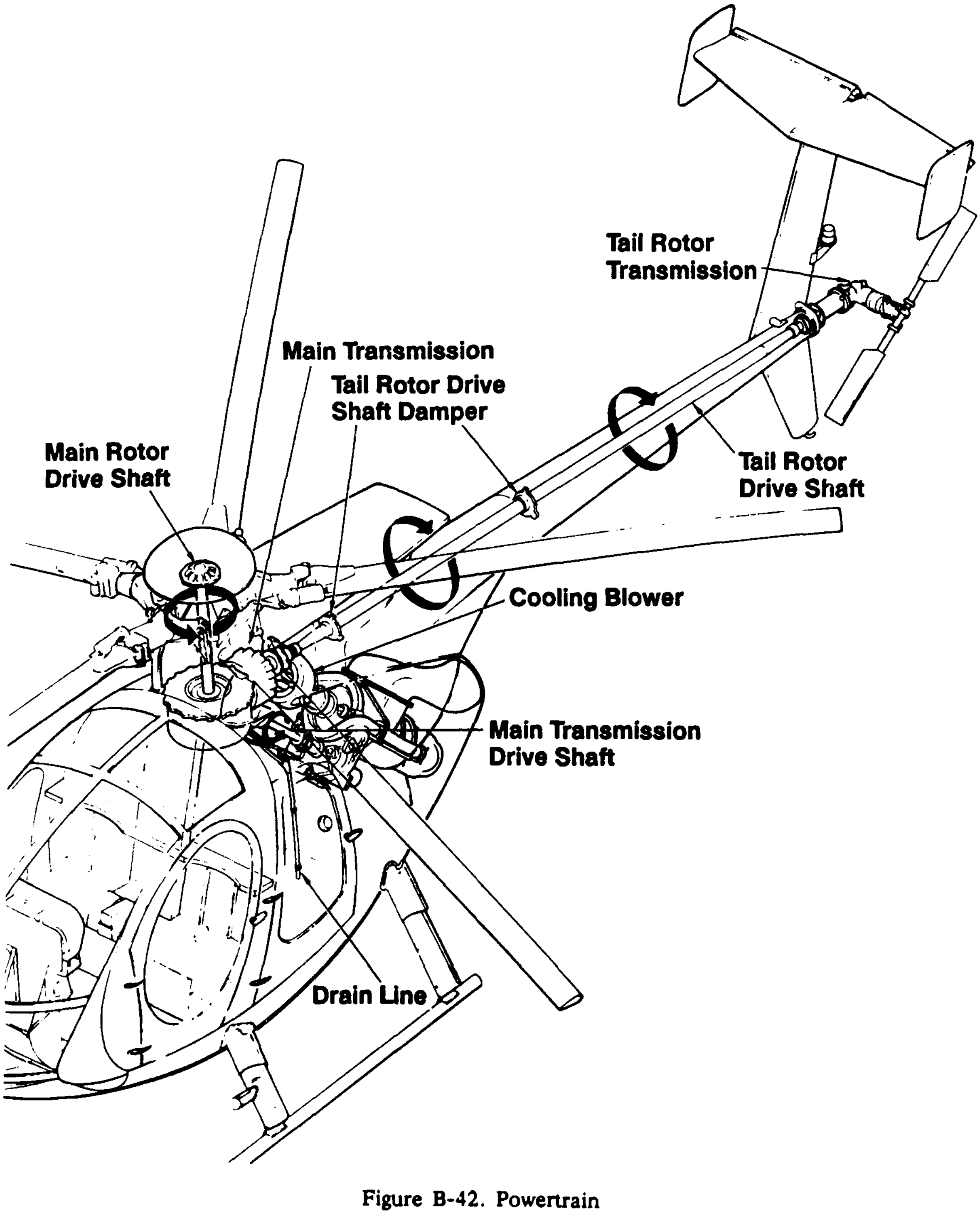


Figure B-42. Powertrain

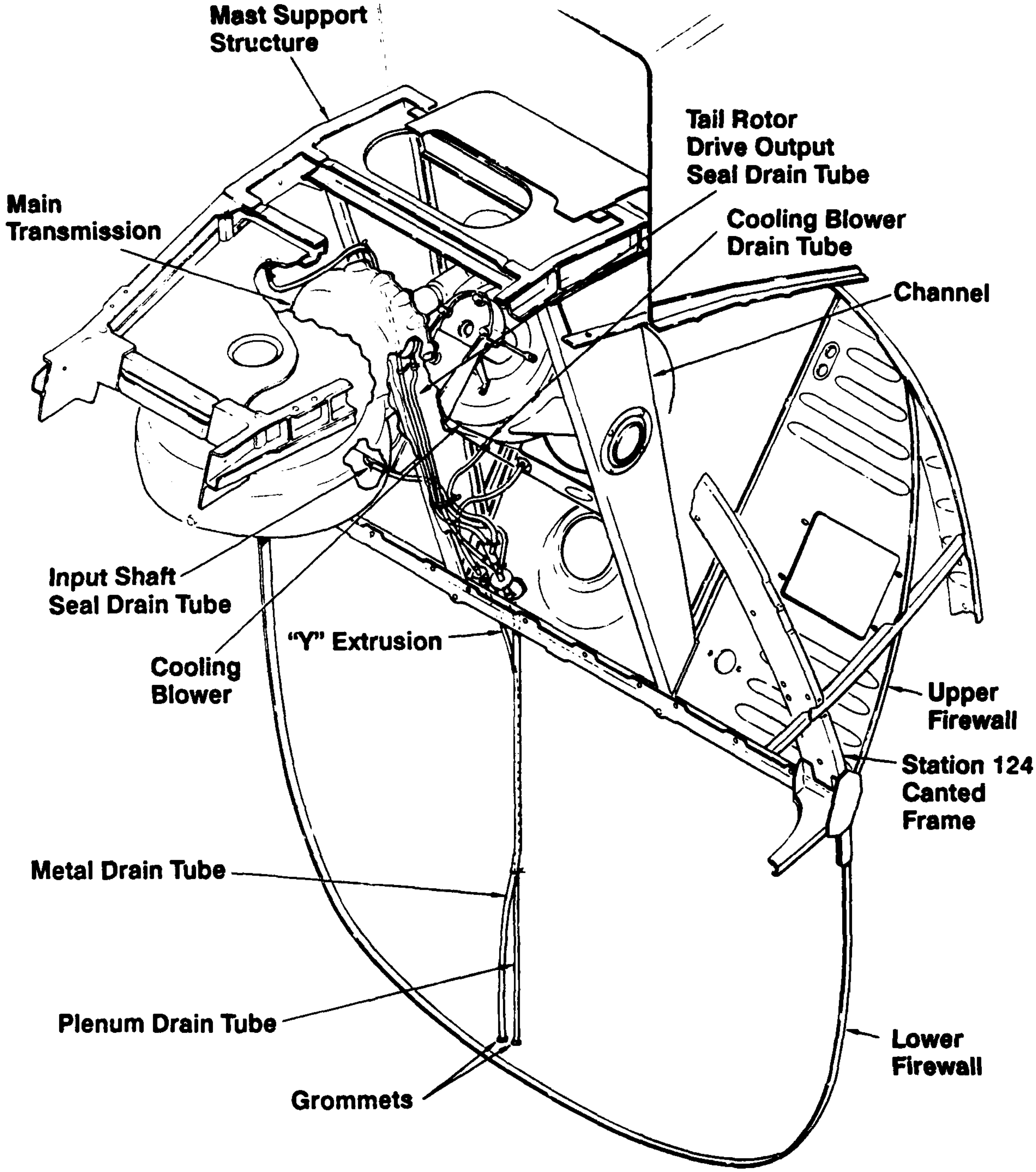


Figure B-43. Main Transmission Mounting

Overrunning Clutch

26. The overrunning clutch transmits power from the engine to the main transmission drive shaft. The clutch is designed to disengage the engine from the remainder of the drive system in case of engine failure and during autorotations. The clutch contains a sprag unit that disengages automatically when the engine output shaft speed is less than the corresponding main rotor speed.

Tail Rotor Transmission

27. The tail rotor transmission is a right angle transmission with a magnesium alloy housing. A liquid level plug and a magnetic chip detector are located on the aft end of the transmission. A breather-filler is located on top.

Engine

28. The engine is an Allison Model 250-C30 gas turbine engine rated at 650 shp, uninstalled, sea level standard conditions. 425 shp is provided at 100% rpm and maximum allowable torque. The major engine components are the compressor, combustion section, turbine, and power and accessory gearbox. The major engine systems are the fuel, lubrication, electrical, and anti-icing systems. A detailed description of the engine is provided in the Allison Model 250-C30 Engine manual, reference 12. A drawing of the engine is provided in figure B-44.

FUEL SYSTEM

Main Fuel System

29. The suction type (non-gravity feed) fuel system has two flexible fuel cells in separate compartments below the cargo/passenger floor. Servicing is through the filler neck on the right side of the fuselage. Once the aircraft is started, fuel is drawn from the fuel cells trough the shutoff valve by the engine driven fuel pump. The system has a total capacity of 61.9 gallons and the usable fuel is 59.9 gallons.

Auxiliary Fuel System

30. The HM-012 internal auxiliary fuel tank, noncrashworthy, is an inverted "T" shaped tank and is palletized to facilitate installation and removal. The total maximum fuel capacity is 27.5 gallons. The total assembly weighs 214 pounds wet (JP-4 @ 6.5 lb/gal). Nylon straps are used to secure the assembly to the airframe. Two personnel seats are integral to the tank container assembly and located on each side of the center vertical tank assembly. The tank is fueled via the gravity port located on the top center of the tank. Fuel is transferred from the auxiliary tank to the main tank by gravity through a fitting in the main fuel tank gravity filler neck. Fuel flow is controlled though an on/off valve which is located between the auxiliary fuel tank outlet and the main fuel tank filler neck. The on/off valve is controlled through the use of a push/pull cable and handle. The handle is located in the cabin compartment ceiling area above the pilot station. Depressing the

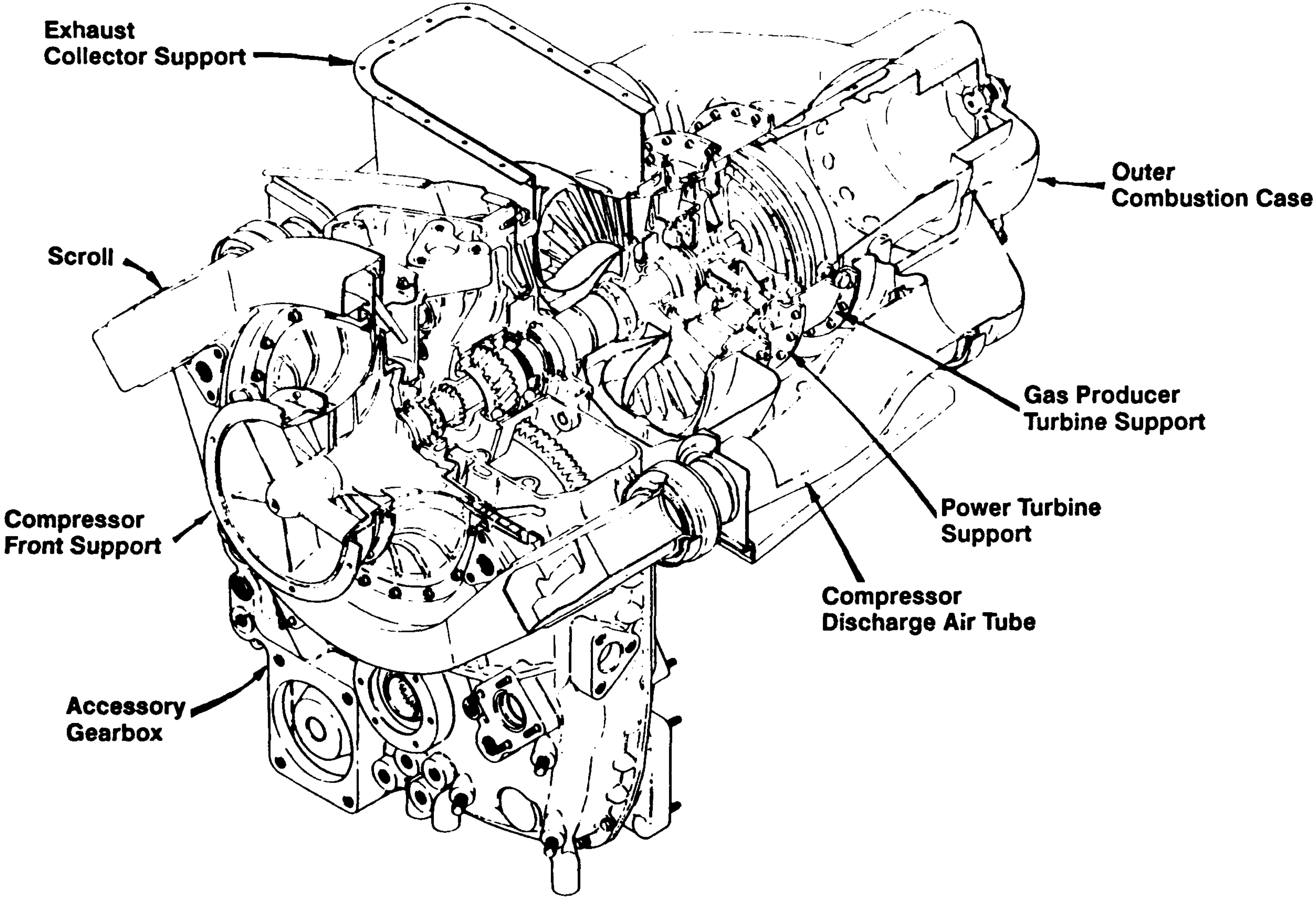


Figure B-44. Allison 250-C30 Series Engine locking button and pulling the handle opens the on/off valve, allowing auxiliary fuel to flow into the main tank. The average transfer rate is approximately 50 gallons/hour

Inlet System

31. The optional Hughes 369H90148-527 Engine Particle Separator Filter system was installed and is shown schematically in figure B-45. The installation incorporates a particle separator filter, a bleed air operated eductor system with electrical control, a pressure sensor, and a manually operated bypass door. The particle separator unit filters engine intake air, and uses centrifugal force to separate heavy dirt particles from the stream of air entering the engine. The eductor system, powered by engine compressor air, boosts the scavenge velocity increasing the efficiency of particle removal, and ejects the particles overboard prior to reaching the engine inlet. The pilot operated electrical control allows selection of compressor air for augmented separation and particle discharge. A differential pressure sensor monitors air pressure at the particle separator inlet and engine plenum chamber. When differential pressure exceeds specified limits, a visual indicator lights to alert the pilot to potential clogging of the inlet. A manually operated bypass door provides an alternate unfiltered air path to the engine plenum chamber.

Electrical System

32. The helicopter electrical system includes all power control, and distribution equipment used to regulate and transport electrical power to the helicopter electrical components. Electrical energy for the system is supplied by a 28 volt direct current, 200 ampere, engine driven generator, and a 24 volt nickel cadmium battery. The system is a nominal 28 volt, single wire installation with the helicopter structure as the ground return, and incorporates an external power receptacle. Control of the system, exclusive of optional equipment controls, is provided by switches and circuit breakers. All circuits of the system are protected by push-to-reset or switch type circuit breakers. Current path return, static charge and radio frequency bonding jumpers are used at appropriate locations.

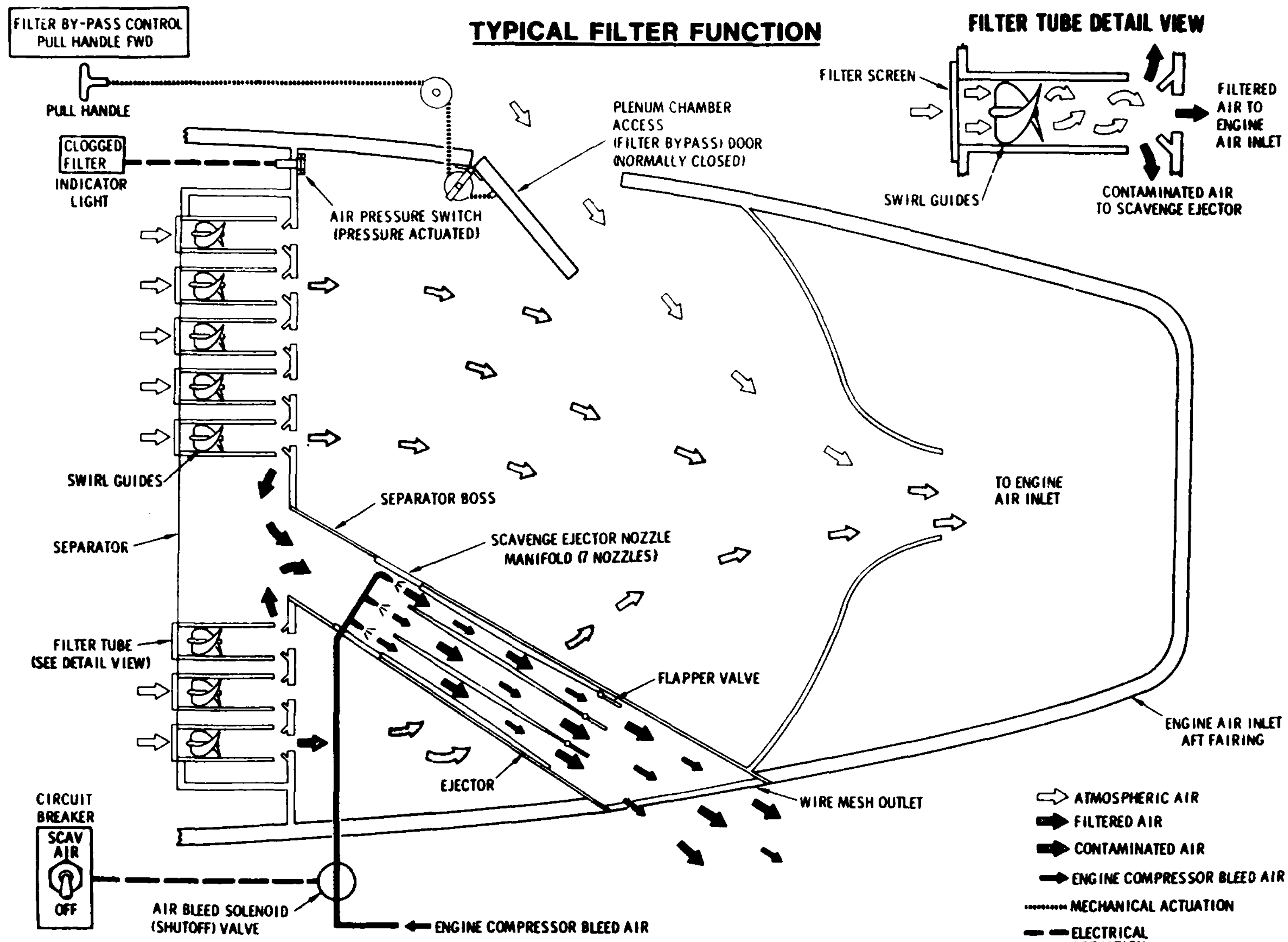


Figure B-45. Particle Separator Filter Installation Schematic

DIMENSIONAL DATA

General

33. The following summarizes rotor and stabilizer data.

Rotor Characteristics

	Main	Tail
Number of Blades	5	2
Rotor Diameter (ft)	27.35	4.75
Rotor Disc Area (ft^2)	587.5	17.72
Blade Chord (constant) (inches)	6.75	5.33
Blade Twist (deg)	9.5 washout	9.5 washout
Total Blade Area (ft^2)	38.46	2.10
Solidity (thrust weighted)	0.0653	0.1150
Airfoil Section, NACA	0015	63-415
Delta 3 (ft^2)	0	30
Droop Stop Flapping (deg)	-6	10 soft, 15 hard
Droop Stop Coning (deg)	0 static,	-2 rotating
Built-in Collective Pitch		
at 3/4 radius (straps untwisted, deg)	7.75	4.03
Flap Hinge Offset (inches)	6	-

Rotor Speed Limits

	MAIN ROTOR (rpm)	MAIN ROTOR (ft/sec)	TAIL ROTOR (rpm)	TAIL ROTOR (ft/sec)
Maximum Pwr Off				
Design	533	763	3182	791
Redline	508	727	3033	754
Minimum Pwr Off				
Design	390	559	2328	579
Redline	410	587	2448	609
Maximum Pwr On	477	684	2848	708
Minimum Pwr On	473	677	2824	702

Stabilizer Data

Horizontal Stabilizer P/N SKD-421-087-511

Span (ft)	5.33
Tip Chord (ft)	1.22
Root Chord (ft)	1.90
Area (ft^2)	8.18
Airfoil Root	NACA 6518 Inverted
Airfoil Tip	NACA 6515 Inverted

Incidence (deg)	
(relative to hub plane)	8.92–9.42
Total Area of End Plates, (ft^2)	1.42 each

Upper Vertical Stabilizer - Portion above Centerline of Boom

Span (ft)	3.45
Tip Chord (ft)	0.94
Root Chord (ft)	1.27
Area (ft^2)	3.91
Airfoil Root	13.4 % thick- modified section*
Airfoil Tip	18.3 % thick- modified section*

Lower Vertical Stabilizer - Portion Below Centerline of Boom

Span (ft)	2.29
Tip Chord (ft)	0.59
Root Chord (ft)	1.27
Area (ft^2)	2.14
Airfoil Root	13.4 % thick- modified section*
Airfoil Tip	28.0 % thick- modified section*

* Vertical Stabilizer is flat sided, constant thickness (2.06 inches) section

CONTROL RIGGING, DESIGN

Main Rotor

Collective Pitch, Full Travel, min	14.25 deg (up to down)
Collective Pitch at Down Stop	0 to 3 deg. (ground adjustable)
	0 to 3 deg (gnd adjustable)
Range of Cyclic Pitch Blade	Forward 17 deg
Angles from Neutral Rigging	Aft 7 deg
Position, minimum	Left 7 deg
	Right 5.5 deg

Tail Rotor

Range of Blade Pitch Angles at 3/4 radius (deg)	13 (right thrust)
	27 (left thrust)

MAJOR AIRCRAFT CONFIGURATIONS

34. The test aircraft was flown in 24 different external configurations. Equipment used in the unclassified configurations are described below. The classified configurations are described in appendix F.

Low Rider

35. The low rider equipment was installed on both sides of the aircraft and was flown with and without simulated personnel onboard as shown in figure B-46 and B-47. The low rider is used to transport personnel to an objective and allow the personnel to rappel from the aircraft.

Universal Mount

36. The universal mount system provides a means of installing a variety of weapon systems on the AH-6G aircraft. The system consists of modified AH-1 ejector racks that are attached to the left and right side of the aircraft as shown in figure B-48. Each of the ejector racks are equipped with an electrically operated ballistic device to jettison the attached weapon during an emergency. A variety of weapon systems were installed on the universal mount for this test to include the M 261 19-shot rocket launchers, M 260 7-shot rocket launcher, and the HMP.

Four-station Weapons Platform (Plank)

37. The plank is an ordnance mounting system that was mounted to the cargo floor and extends out each side of the aircraft as shown in photo B-49. The plank was built by Aerocrafter Inc. The plank has the capability of two weapon stores per side with the outboard stations installed. The plank had the "certified Talley Cobra" outboard ejector racks installed on the outboard stations. The outboard racks are the only ones that have jettison capability. The outboard racks can carry the 19 and 7-shot rocket launchers (450 lb maximum allowable weight) while the inboard can only carry the hard mounted 50 cal. Although not evaluated, the M-134 7.62mm machine gun may be mounted on either or both sides of the plank at the inboard station.

M-261 19 Shot Rocket Launcher

38. The M-261 19-shot rocket launcher (FSN 1055-01-071-0064) was installed on the universal mount and the plank as shown in figure B-50.

M-129 (Xm-8 40mm Grenade Launcher)

39. A simulated XM-8 40MM grenade launcher was mounted to the left side of the aircraft as shown in figure B-51.

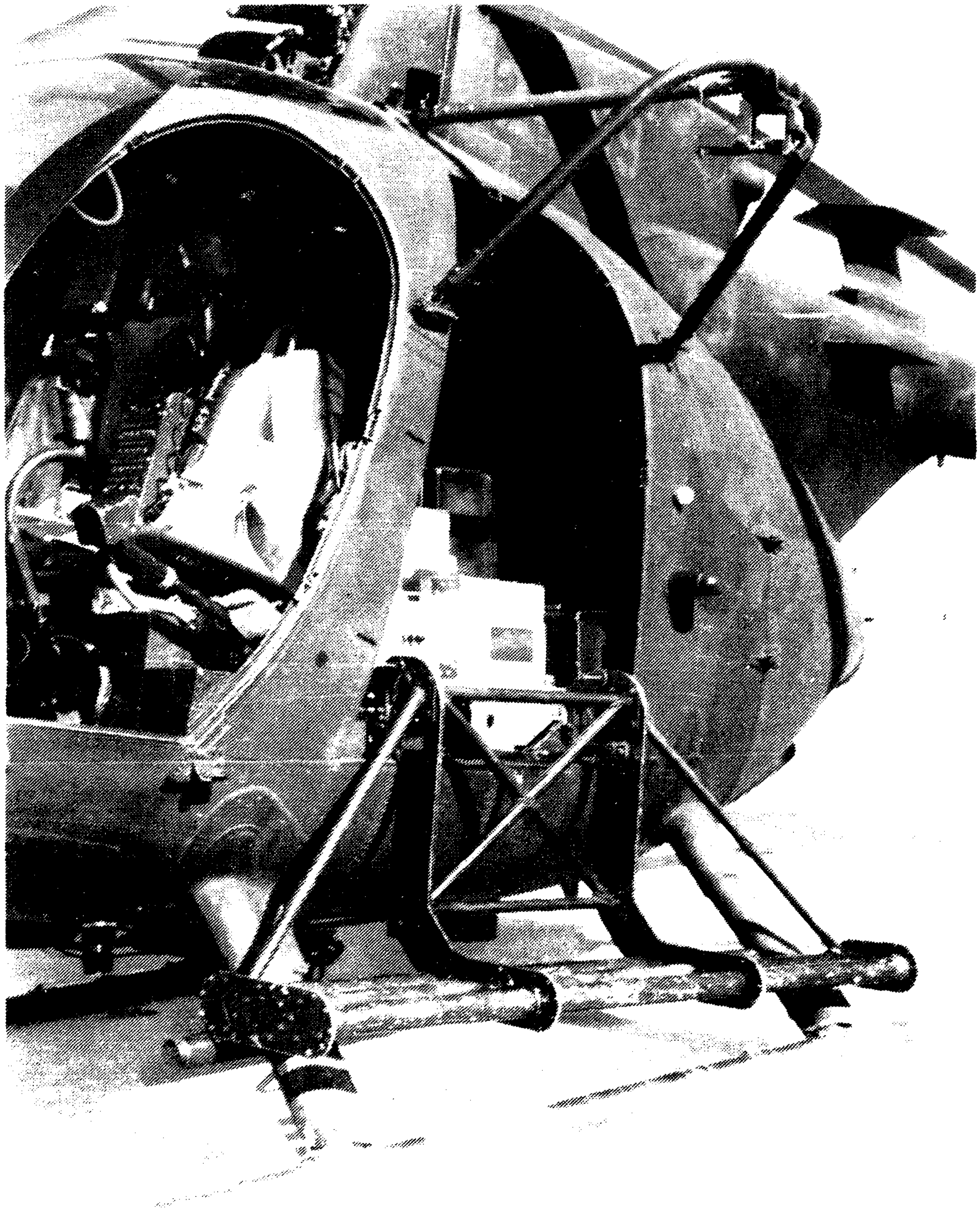


Figure B-46. Low Rider Equipment

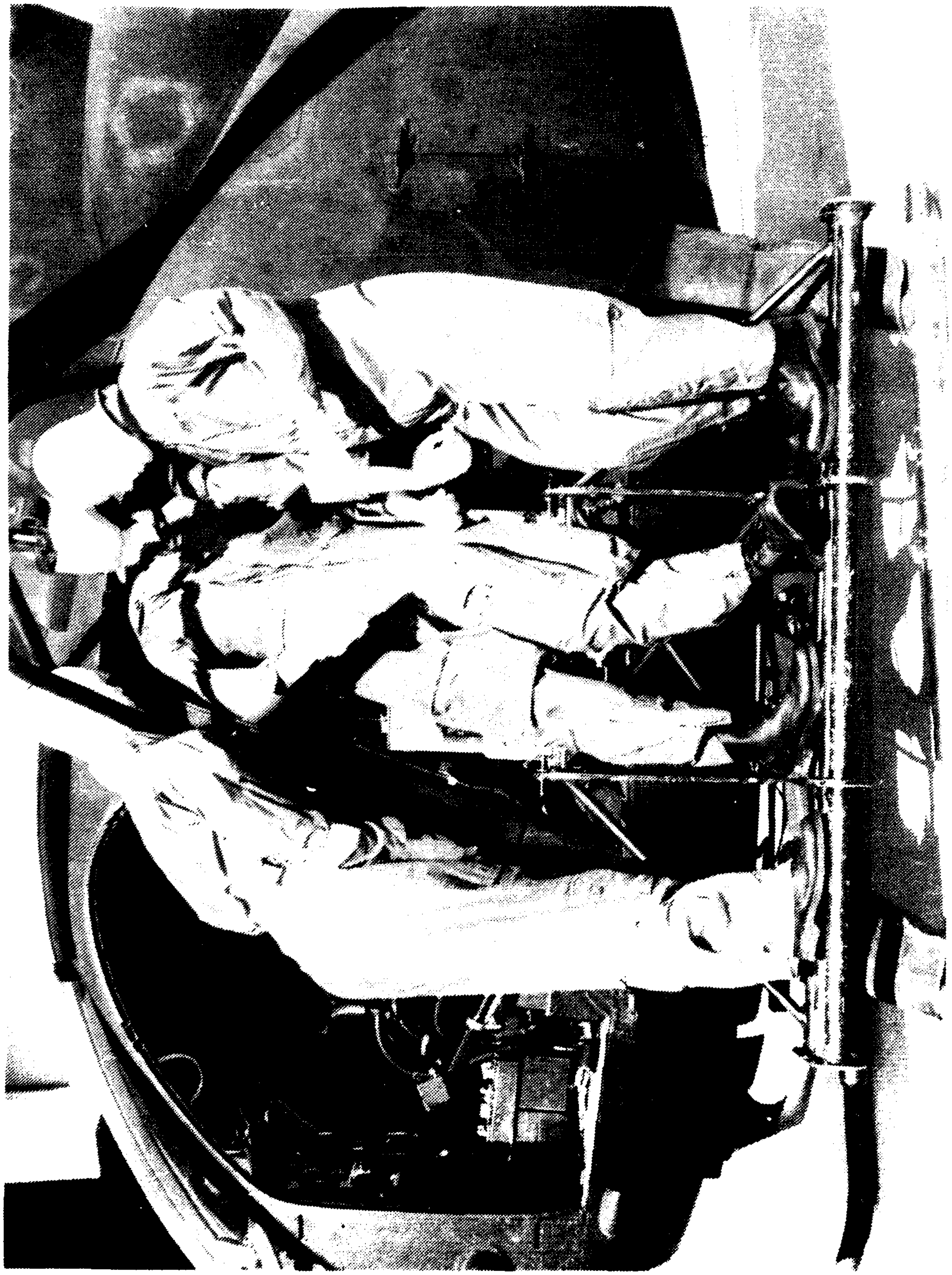


Figure B-47. Low Rider Equipment with Simulated Personnei

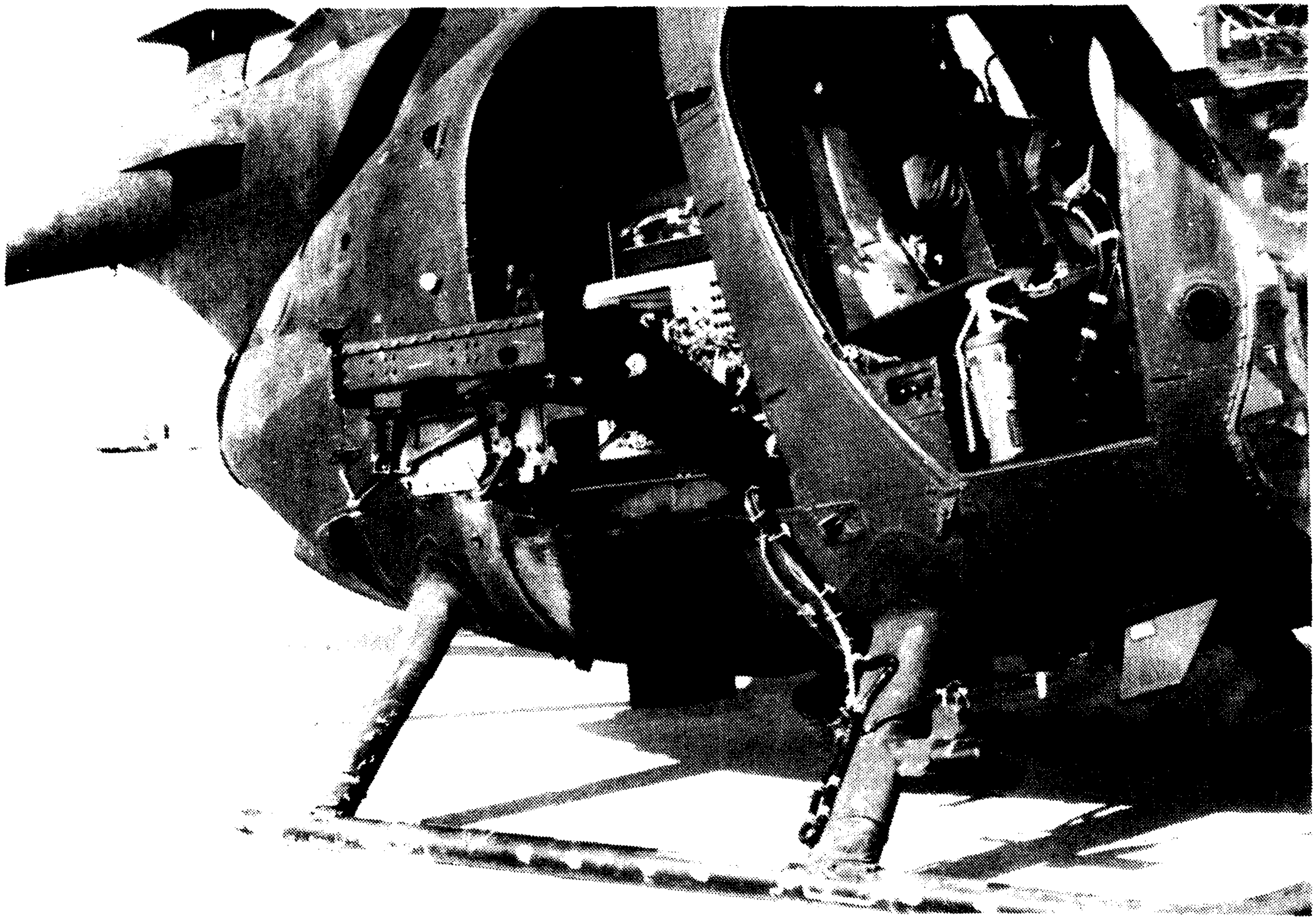


Figure B-48. Universal Mount

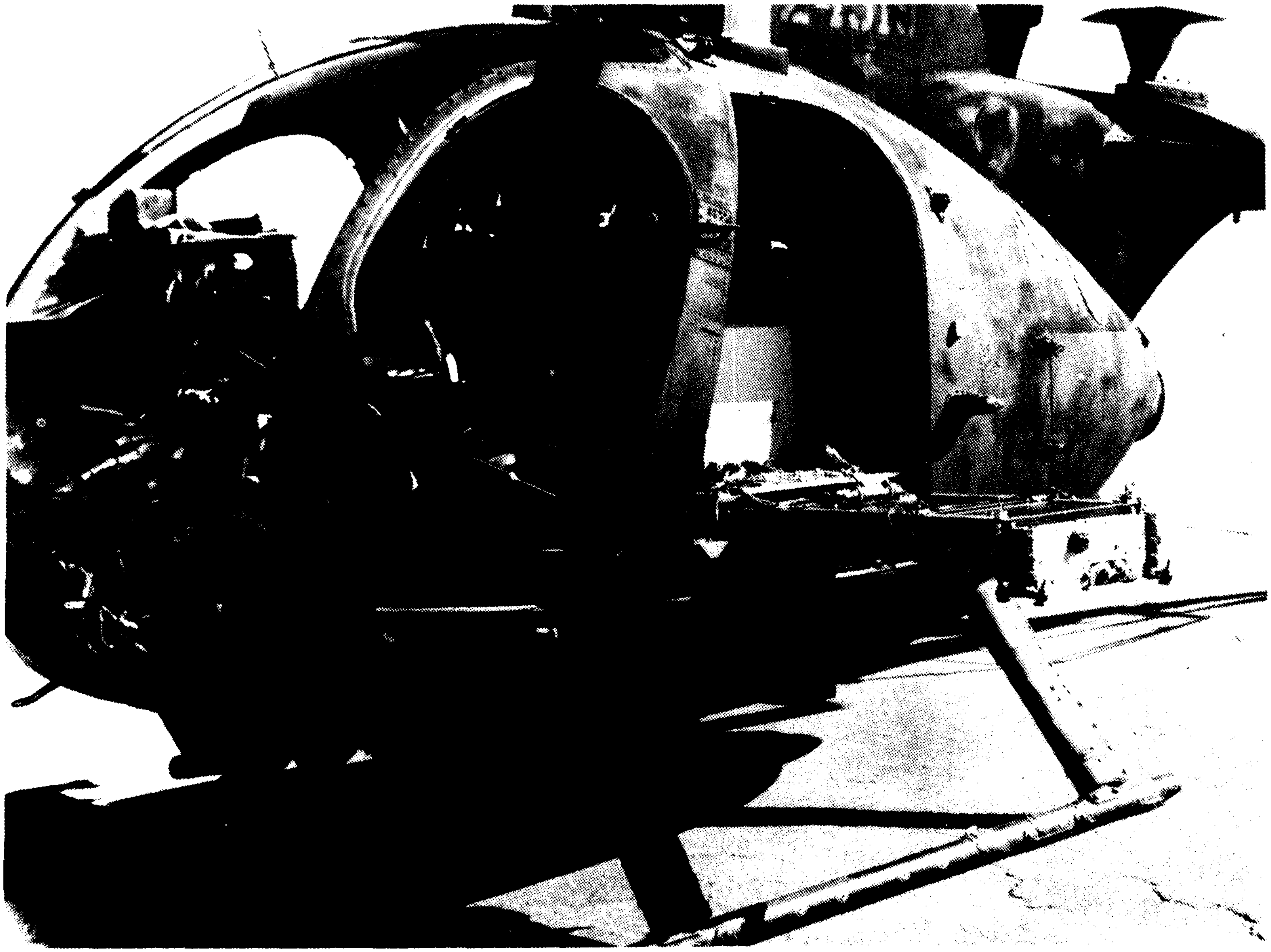


Figure B-49. Four-Station Weapons Platform (Plank)

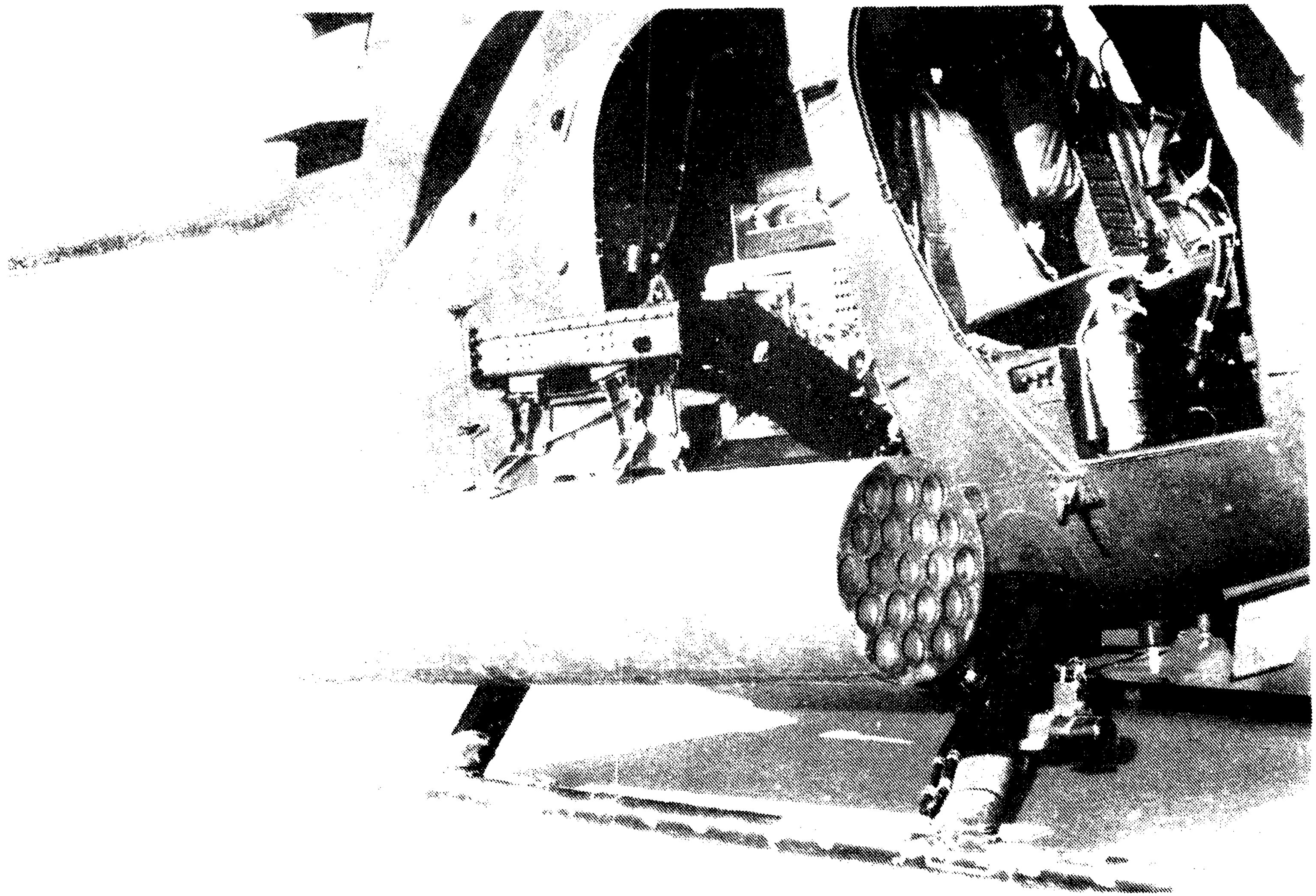


Figure B-50. M-261 19-Tube Rocket Launcher Mounted on the Universal Mount

Figure B-51. Simulated XM-8 40MM Grenade Launcher

M2AC (50 Caliber) Machine Gun

40. The M2AC (50 caliber) machine gun was mounted to the inboard weapon pylon of the plank as shown in figure B-52.

M260 7-Shot Rocket Launcher

41. The M260 7-shot rocket launcher was installed on the plank and on the universal mounts as shown in figures B-53 and B-54. This launcher was also installed on the right side of the aircraft on a hard mount as shown in figure B-55.

M-134 7.62MM Machine-gun

42. The M-134 7.62mm machine-gun was installed on the left side of the AH-6G as shown in figure B-56.

HMP with MRL-70

43. The HMP (Heavy Machine-gun Pod) is a self-contained unit housing a single 50 caliber machine gun with a maximum of 1000 rounds of ammunition contained within the pod. The gun is capable of firing 1000 rounds per minute. The MRL-70 is a 2.75 inch folding fin aerial rocket launcher that is installed on the underside of the HMP. The HMP with the MRL-70 was installed on the universal mount on the left and right side of the aircraft as shown in figure B-57.

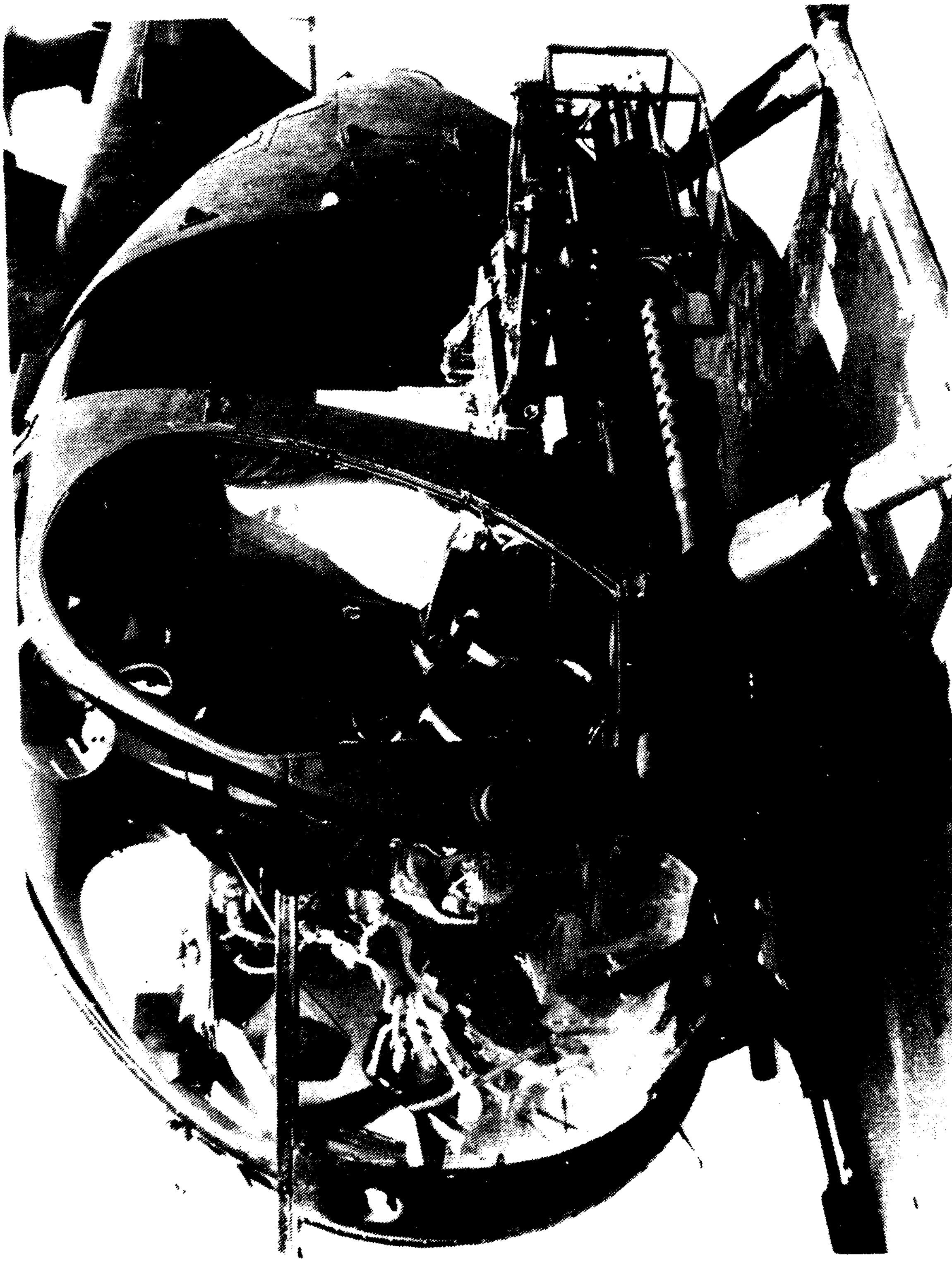


Figure B-52. M2AC 50 Caliber Machine Gun Mounted on the Plank.

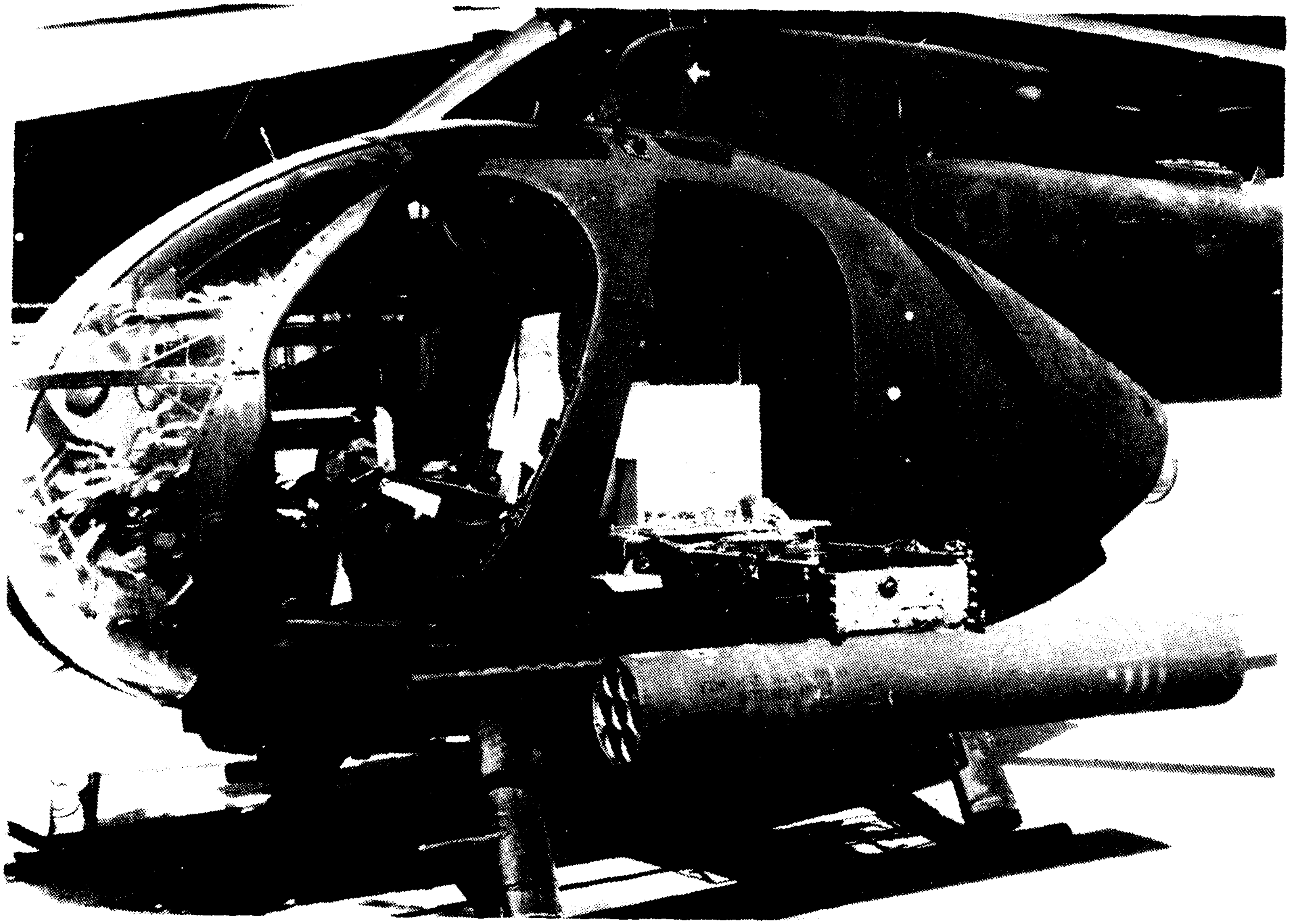


Figure B-53. M260 7-Tube Rocket Launcher Mounted on the Plank
(M2AC 50 Caliber Machine Gun Mounted inboard Station)

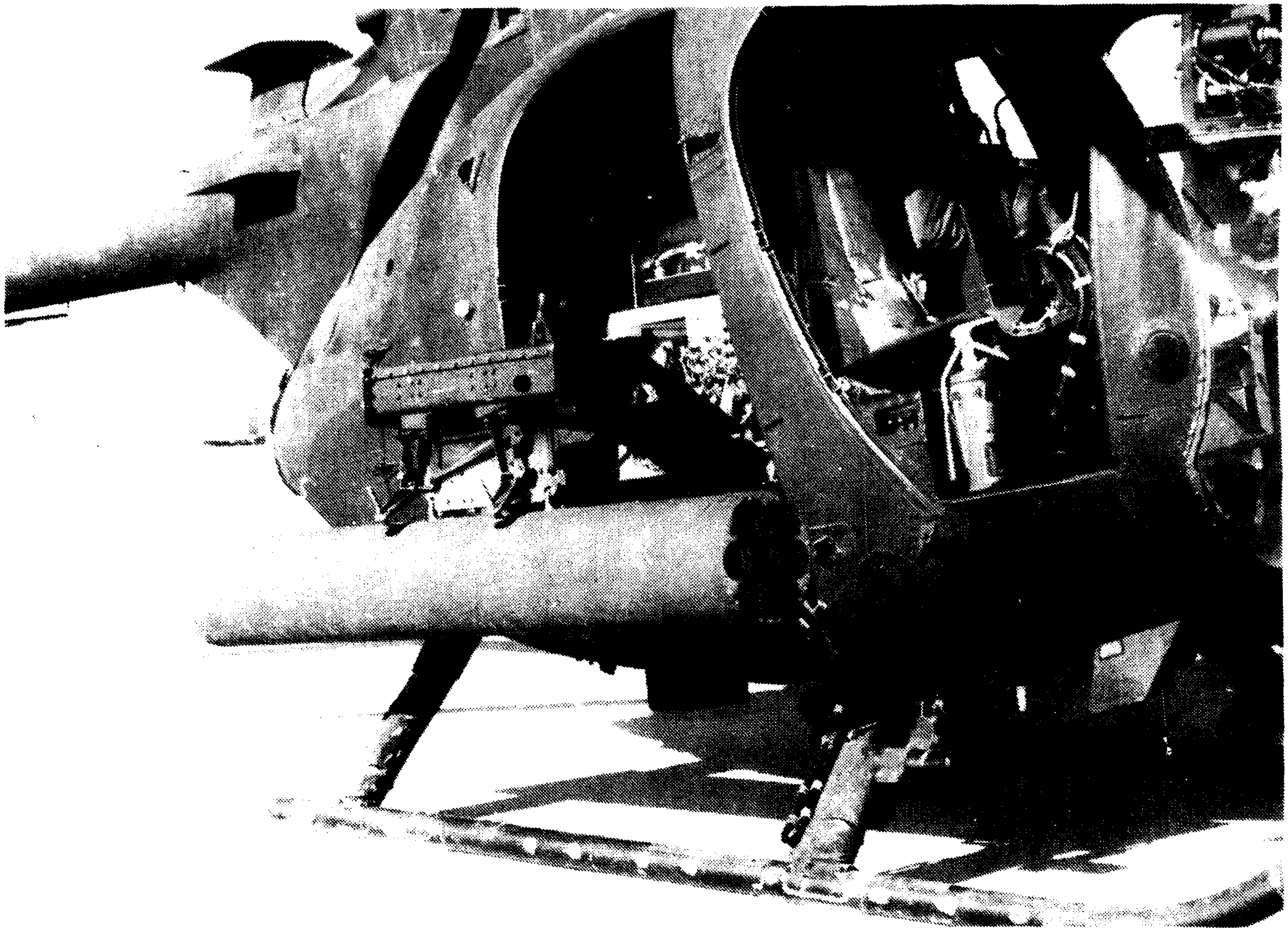


Figure B-54. M260 7-Tube Rocket on Universal Mount

Figure B-55. M260 7-Tube Rocket Launcher Hard Mounted

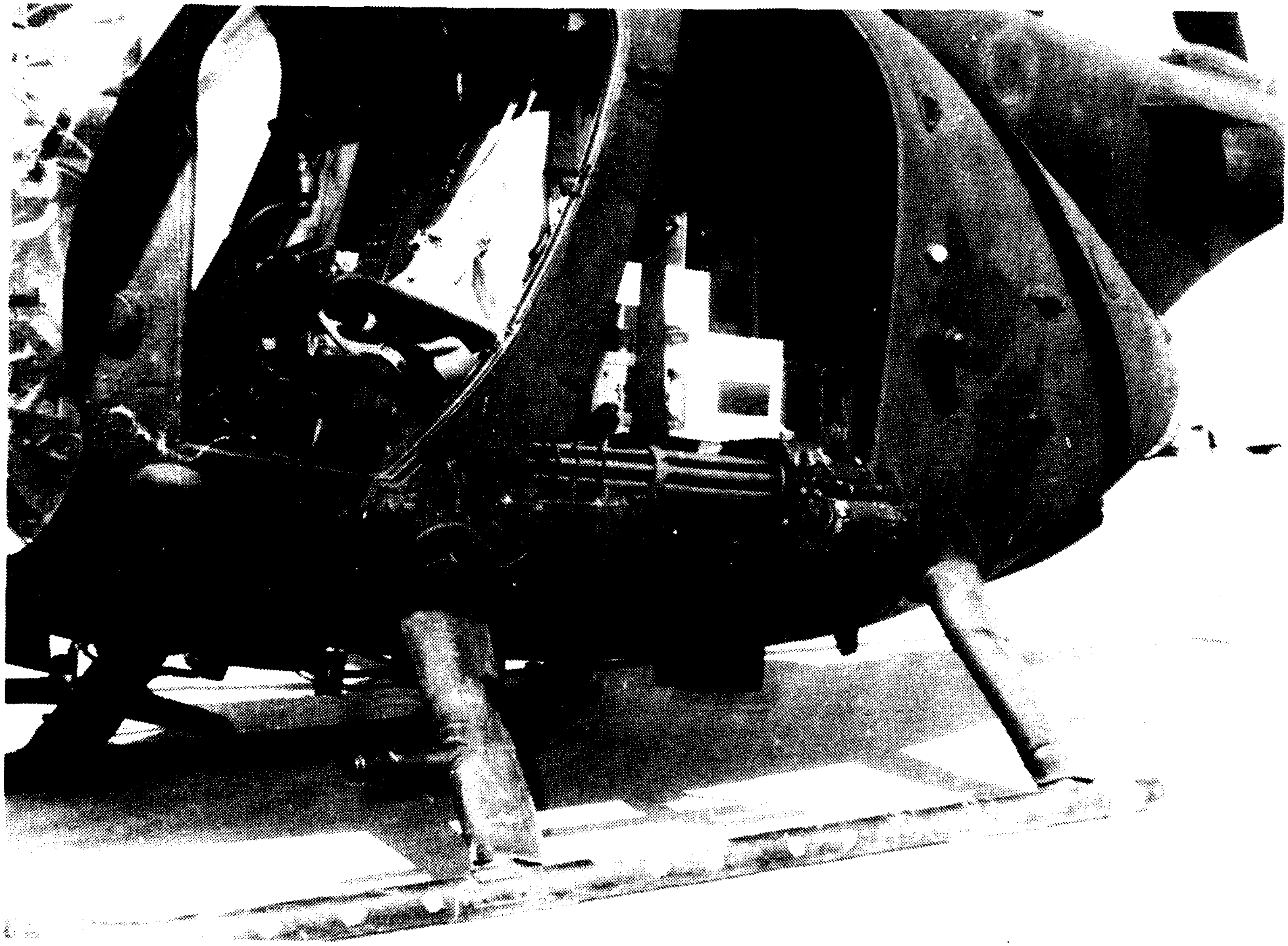


Figure B-56. M-27 Mini-Gun System

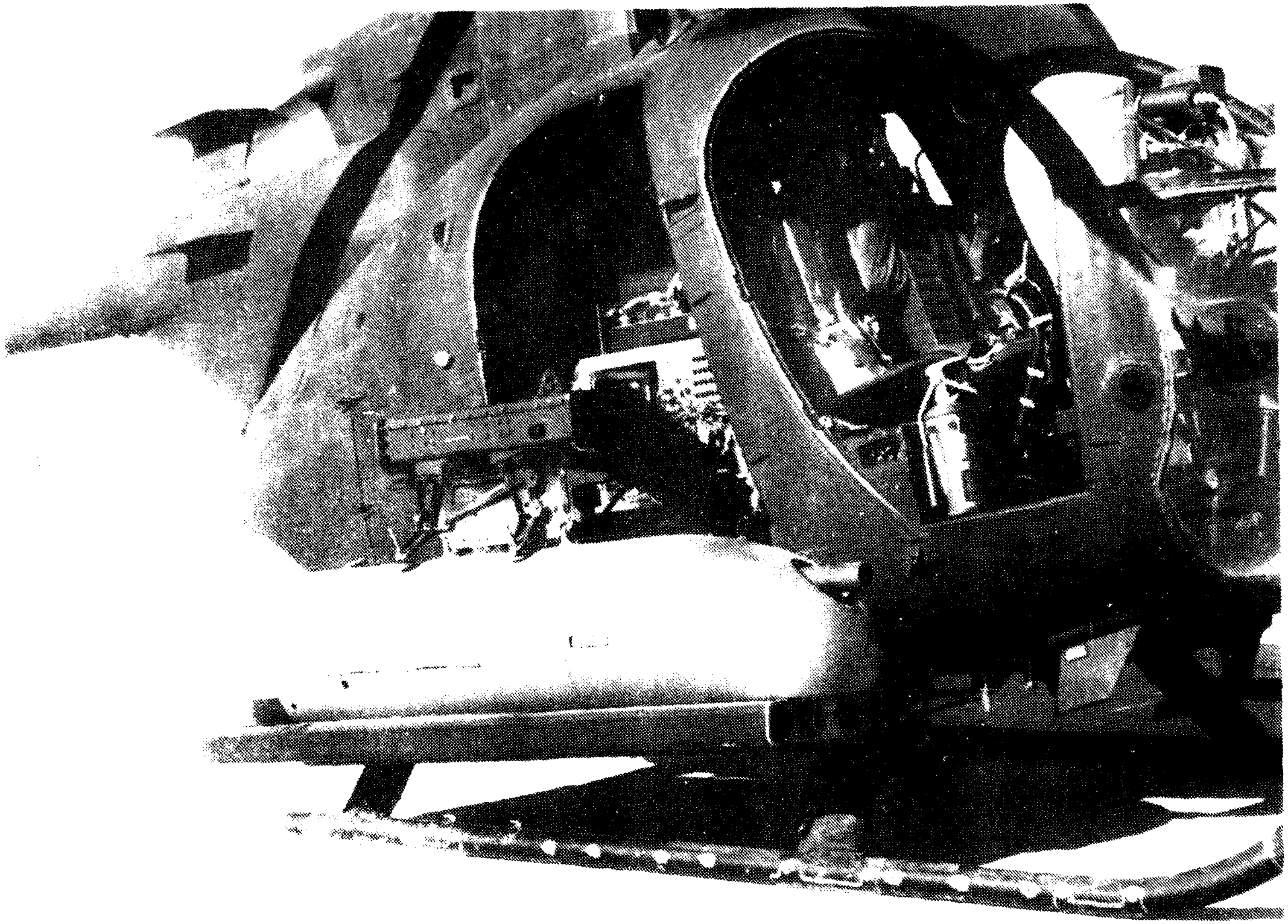


Figure B-57. HMP with MRL-70 on Universal Mount

APPENDIX C. INSTRUMENTATION

GENERAL

1. The test instrumentation pulse code modulation (PCM) data system was installed, calibrated, and maintained by the U.S. Army Aviation Engineering Flight Activity. External modification to the aircraft included the installation of an airspeed boom, tail rotor slip rings, tail rotor/formation light contact indicator, and tail rotor flapping 10% warning switch.

2. Cockpit indicators used during the test included:

   Airspeed, sensitive (boom)
   Airspeed, sensitive (ship)
   Altitude (boom)
   Rate of climb (ship)
   Angle of sideslip
   Main rotor speed (digital)
   Load factor
   Total air temperature
   Fuel used
   Fuel flow rate
   Engine torque
   Cable tension and angle (hover only)
   Radio range controls (takeoffs and landings only)
   Tail rotor contact light
   Tail rotor 10% flap light
   Instrumentation controls and indicators

3. Data recorded on magnetic tape and available for telemetry included the following:

   Airspeed (boom)
   Airspeed (ship)
   Altitude (boom)
   Altitude (ship)
   Altitude, radar
   Angle of attack
   Angle of sideslip
   Normal acceleration
   Collective position
   Longitudinal cyclic position
   Lateral cyclic position
   Pedal position
   Fuel used
   Fuel flow
   Measured gas temperature
   Total air temperature
   Gas producer speed
   Engine output speed
   Main rotor speed

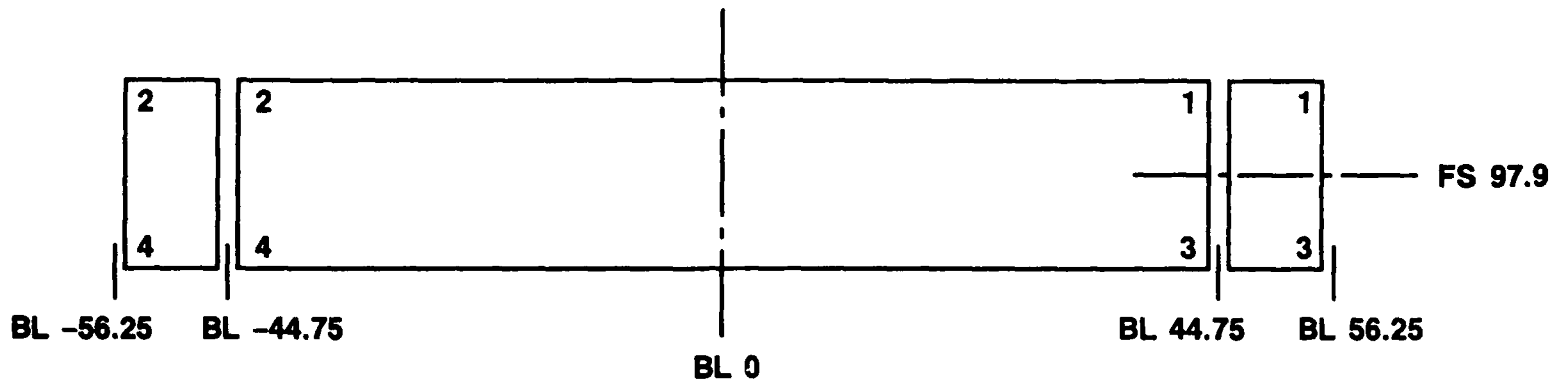
Pitch attitude
Pitch rate
Roll attitude
Roll rate
Yaw attitude (random reference)
Yaw rate
Engine torque pressure
Tail rotor 10% flapping remaining
Vibration acceleration (four places on plank only)
Cable tension (hover only)
Radio range data (takeoff and landing only)
Time code, record number, tape status, etc.

VIBRATION

4. During the evaluation of the plank, vibration accelerometers were installed on the outboard edge as shown in figure C-1. With the plank empty, or when rocket launchers were mounted, the accelerometers were mounted on the removable outboard section (approximately BL ± 54). When only the machine gun was mounted, the outboard section of the plank was removed and the accelerometers relocated to the edge of the fixed plank (approximately BL ± 42). The forward accelerometers measured vertical and longitudinal acceleration, and the rearward accelerometer measured vertical only.

AIRSPEED CALIBRATION

5. The standard ship's system and test boom pitot-static system were calibrated during level flight, climbs, and descents using the trailing bomb method. The position error of the boom is presented in figure C-2.



ACCELEROMETER	DESCRIPTION
1	Vertical
2	Vertical
3	Vertical & Lateral
4	Vertical & Lateral

Note: Accelerometers located on outboard edge of plank. All configurations used the 11.5 in. extension except when the machine gun was mounted without a rocket launcher.

Figure C-1. Vibration Accelerometer Location on Plank

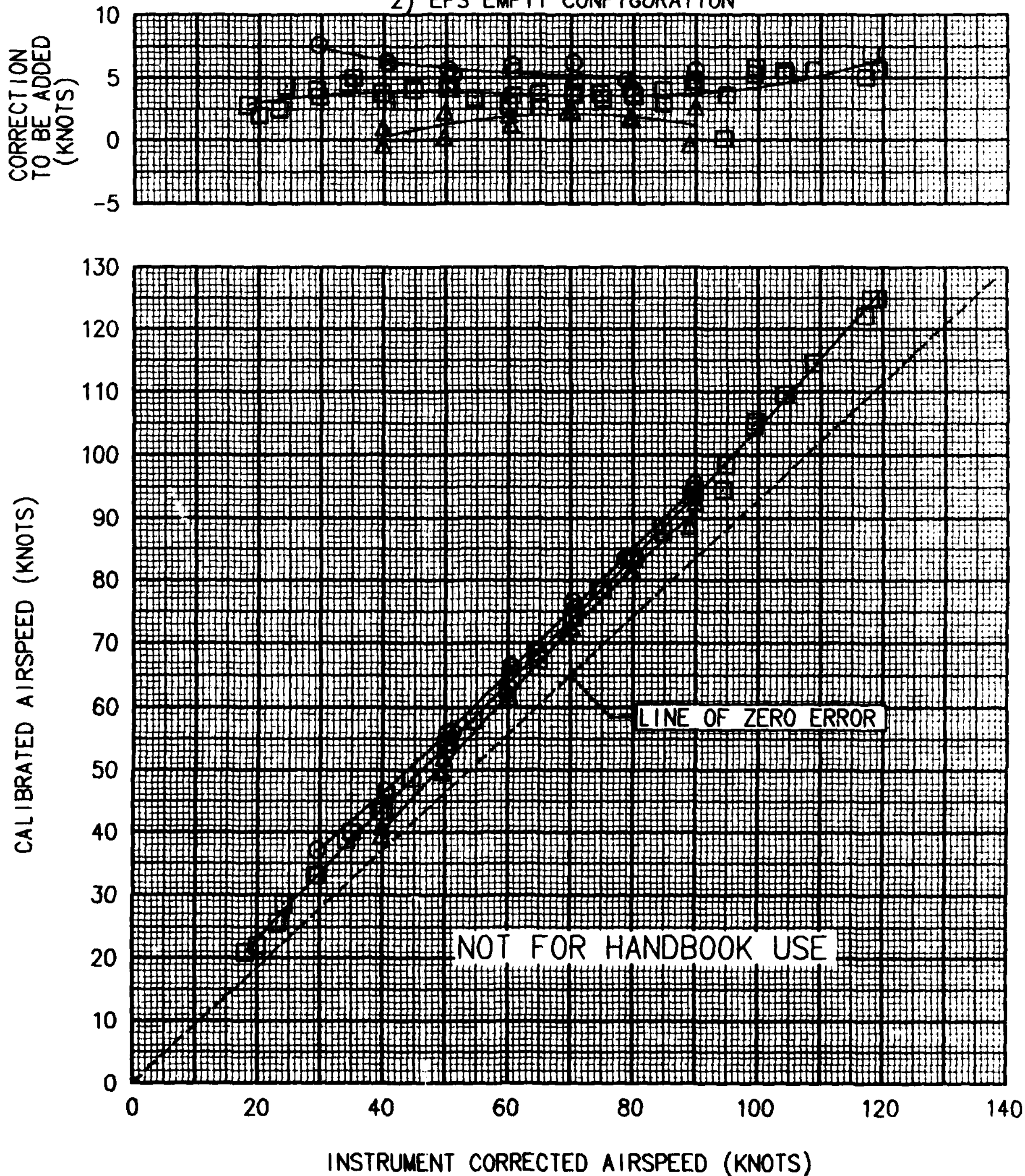
FIGURE C-2

BOOM AIRSPEED CALIBRATION

AH-6G USA S/N 84-24319

SYM	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
□	2940	102.4 (MID)	7180	20.8	477	LEVEL
○	2810	101.7 (MID)	7910	19.2	477	CLIMB
△	2740	101.7 (MID)	7380	19.6	477	AUTO DESCENT

NOTES: 1) TRAILING BOMB METHOD
2) EPS EMPTY CONFIGURATION



APPENDIX D. TEST TECHNIQUES AND DATA ANALYSIS METHODS

GENERAL

1. Performance data were obtained using the basic methods described in U.S. Army Material Command Pamphlet, AMCP-706-204 (ref 8, app A). Performance testing was conducted in zero sideslip flight. Handling qualities data were evaluated in coordinated (ball-centered) flight using the standard test method described in Naval Air Test Center flight Test Manual, FTM 105 (ref 7). In some configurations, ball-centered trim was uncomfortable. In those situations, trim was established at the condition an operational pilot would most likely have flown the aircraft.

AIRCRAFT WEIGHT AND BALANCE

2. The aircraft was weighed in the instrumented configuration with full oil, no fuel, auxiliary 28 gallon fuel tank installed, no EPS or wing stores, and no doors. The aircraft weighed 2124 lb with the center of gravity located at FS 106.3. An external sight gage was installed on the main fuel cell and was calibrated by adding measured quantities of fuel to the empty tank. A dip stick was calibrated to determine fuel quantity in the auxiliary tank. The main tank held 61 gallons of fuel, and the auxiliary tank dip stick was calibrated to 27 gallons (approximately 1 inch from the top of the tank). The fuel weight for each test flight was determined by the fuel volume and the specific weight of the fuel.

ENGINE CALIBRATION

3. Prior to flight testing, the engine was removed and delivered to Aviall, Inc. of Pheonix, AZ. A 23 point calibration was performed to assure that the engine was within specification, and to determine the relationship between torque sensor oil pressure and engine output torque. That relationship is shown in figure D-1.

PERFORMANCE

General

4. The following nondimensional parameters were used to process and analyze the AH-6G performance data.

Coefficient of Power (C_P):

$$C_P \equiv \frac{550 \cdot SHP}{\varrho A(\Omega R)^3} = 0.1236E-5\ \frac{SHP}{\sigma} \quad \text{at 100\% rotor speed}$$

Coefficient of Thrust (weight) (C_T):

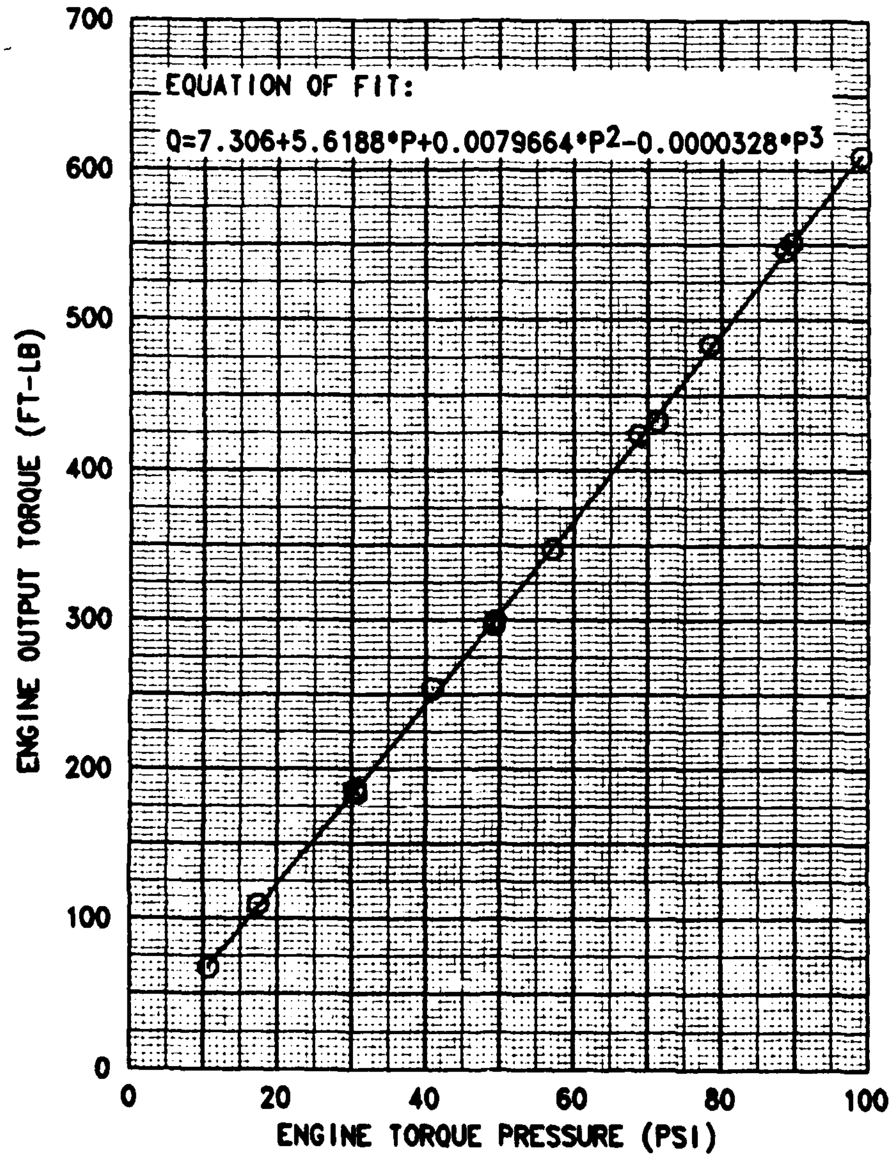
$$C_T \equiv \frac{W}{\varrho A(\Omega R)^2} = 0.015347E-4\ \frac{W}{\sigma} \quad \text{at 100\% rotor speed}$$

FIGURE D-1

ENGINE TORQUE PRESSURE CALIBRATION

ALLISON 250-C30 ENGINE S/N CAE 900065

CALIBRATION PERFORMED BY AVIALL, INC. PHOENIX, AZ 04 FEB 1987



Advance ratio (μ):

$$\mu \equiv \frac{1.68781 V_T}{\Omega R} = 0.0024708 \quad V_T \text{ at } 100\% \text{ rotor speed}$$

Advancing blade tip Mach number (M_{AT}):

$$M_{AT} = \frac{\Omega R + V_T * 1.68781}{a}$$

Where:

550 = Conversion factor (ft–lb/sec/shp)
SHP = Engine output shaft horsepower
ρ = Air density (slug/ft^3)
ρ_o = Standard sea level air density (slugs/ft^3) = 0.002376892
σ = Air density ratio = ρ/ρ_o
θ = (T+273.15)/288.15
T = Ambient air temperature (°C)
A = Main rotor disc area (ft^2) = 587.5
Ω = Main rotor angular velocity (radian/sec)
N = Main rotor angular velocity (rpm) = 477 at 100%
R = Main rotor radius (ft) = 13.675
W = Gross weight (lb)
1.68781 = Conversion factor (ft/sec/knot)
V_T = True airspeed (knots)
a = Speed of sound (ft/sec) = 65.7704 $\sqrt{T + 273.15}$

5. Engine output power was calculated using the data shown in figure D-1 and the output shaft speed.

$$SHP = QE * N_p * \left(\frac{6016}{100}\right) * 2\pi/33,000$$

Where:

QE = Engine output torque (ft–lb)
N_P = Engine output shaft speed (%)
$\frac{6016}{100}$ = Ratio of shaft speed (rpm) to percent
33,000 = Conversion factor of ft–lb/min/shp

Hover Performance

6. Hover performance was obtained by the tethered hover method in which the aircraft pulls on a cable attached to the ground. The cable tension, as measured by a load cell, is

added to the aircraft gross weight to obtain net thrust. Test conditions required winds to be less than 2 knots. The hover data were recorded at skid heights of 2, 6, and 75 feet. Rotor speed was maintained at 100% (477 rpm). The data was converted to a C_T, C_P format and presented nondimensionally. The relationship between atmospheric conditions and specification engine takeoff power was obtained from MDHC, and is presented in figure D-2. That relationship, and the hover performance curves, were used to compute maximum thrust (weight) at various projected conditions.

Level Flight Performance

7. Level flight performance tests were performed by varying airspeed (advance ratio) while maintaining a constant value of C_T. C_T was maintained using the constant rotor speed, constant W/σ method. Altitude was increased (thus lowering σ) as fuel was burned.

8. EPS empty was used as the baseline configuration for all testing. The extreme differences in the range of μ obtained between light and heavy tests made it extremely difficult to form a carpet plot of C_P versus C_T versus μ. Therefore, the data were further generalized using the GENFLIGHT method (ref 13) as shown in figure D-3. The terms used for the axes are:

$$\text{Horizontal velocity ratio} = \mu/\sqrt{C_T/2}$$

$$\text{Generalized power coefficient} = (C_P - C_{P_h})/.707\ C_T^{3/2}$$

C_{P_h} is a function of C_T in the form $C_{P_h} = A_0 + A_1\ C_T^{3/2}$. The equation for C_{P_h} is determined empirically so that scatter in the GENFLIGHT plot is minimized. The OGE hover curve was used as an initial try for C_{P_h}, but was modified several times before a final function was determined.

9. The final GENFLIGHT curve was then mathematically converted back to C_P, C_T, μ format and slightly modified for high values of C_P and low values of μ. That plot is presented in the data in appendix E.

10. The C_P and μ data and the associated fairings were then redimensionalized to the average conditions flown. These normalized values were computed as follows:

$$SHP_n = C_P\ \sigma_n/0.1236E-5 \text{ at 100\% rotor speed}$$

$$V_{T_n} = 404.72\ \mu \text{ at 100\% rotor speed}$$

Where:

SHP_n = Normalized engine output shaft horsepower

σ_n = Average air density ratio during the collection of data

V_{T_n} = Normalized true airspeed (knots)

FIGURE D-2
INSTALLED TAKEOFF POWER AVAILABLE
AH-6G
ALLISON 250-C30R ENGINE

NOTES: 1. POWER TURBINE SPEED = 100%
2. TAKEOFF POWER (30 MINUTE LIMIT)
3. DATA FROM MDHC C30 STATUS DECK INCLUDES INSTALLATION LOSSES

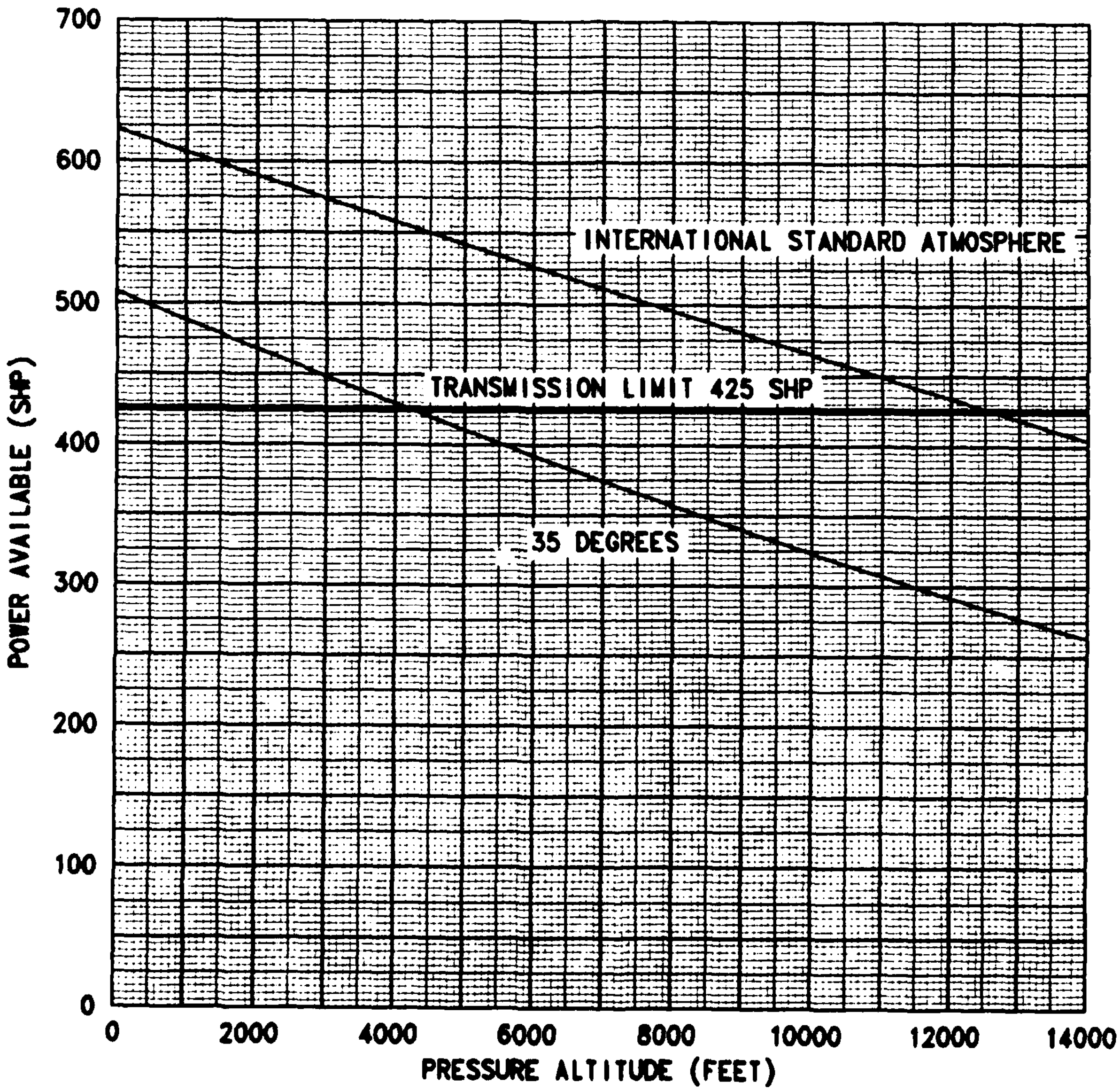
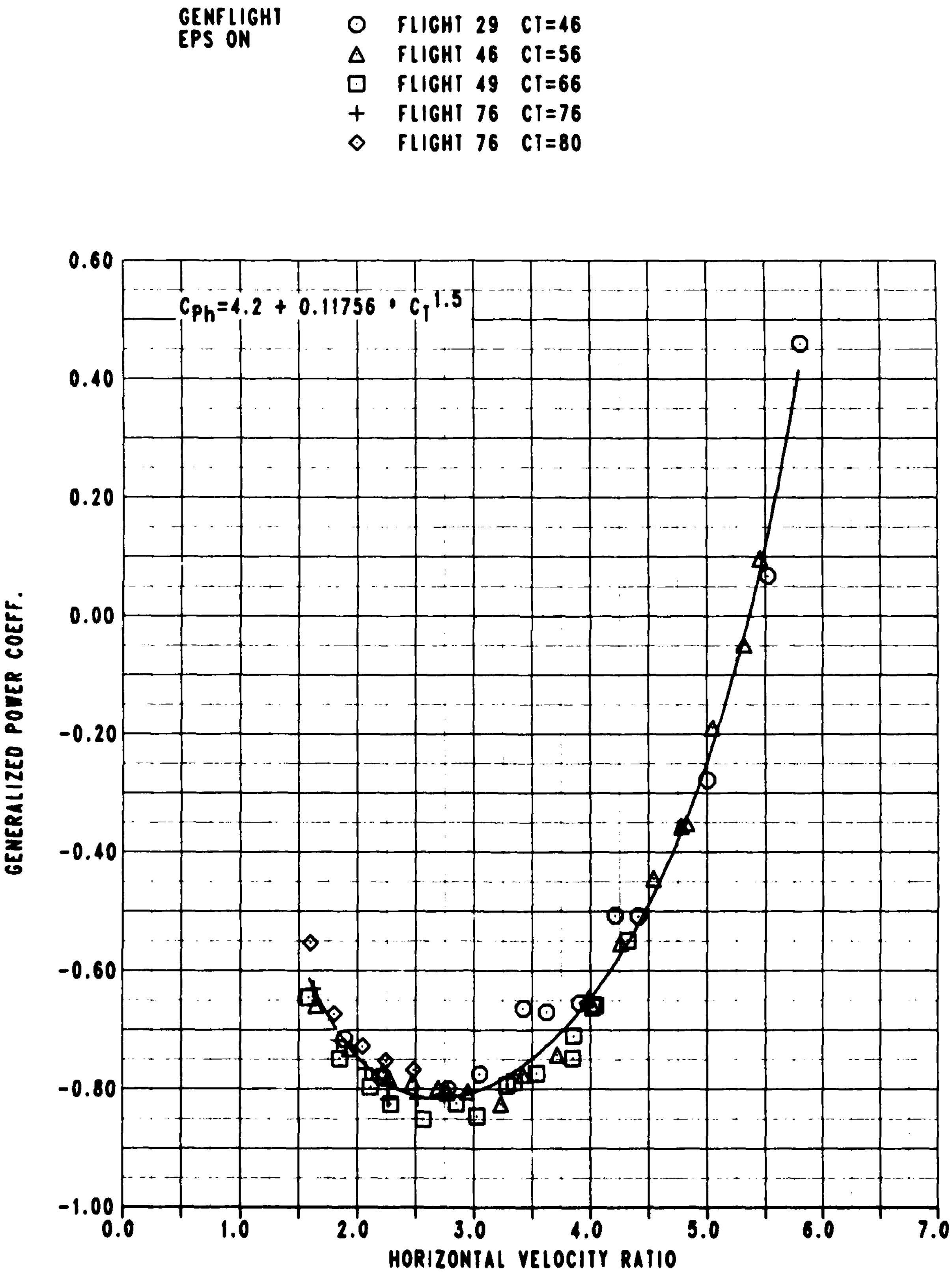


FIGURE D-3

GENFLT PRESENTATION OF AH-6G LEVEL FLIGHT DATA



11. Specific range (SR) data were derived using the following procedure. Engine power and fuel flow rate for the engine were referred as follows:

$$SHP_{ref} = SHP/\delta\sqrt{\theta}$$

$$W_{f_{ref}} = W_f/\delta\sqrt{\theta}$$

Where:

SHP_{ref} = Referred shaft horsepower

W_f = Measured fuel flow (lb/hr)

$W_{f_{ref}}$ = Referred fuel flow (lb/hr)

SHP_{ref} versus $W_{f_{ref}}$ plots were generated for the engine using all the level flight performance data. This curve is shown in figure D-4. The difference between measured referred fuel flow for a given point and the value from the curve at the same SHP_{ref} were determined.

$$\Delta W_{f_{ref}} = W_{f_{ref}} \text{ (measured)} - W_{f_{ref}} \text{ (from curve)}$$

Normalized $W_{f_{ref}}$ was then determined by adding $\Delta W_{f_{ref}}$ to the value generated by the curve at the value of normalized SHP_{ref}. That normalized value of referred fuel flow was then unreferred back to a normalized value of fuel flow (W_{f_n}). Specific range was then calculated by:

$$SR = V_{T_n}/W_{f_n}$$

Equivalent Drag Area

12. Aerodynamic drag is often expressed in the function: $D = \dfrac{C_D \varrho A V^2}{2g_c}$

Where:

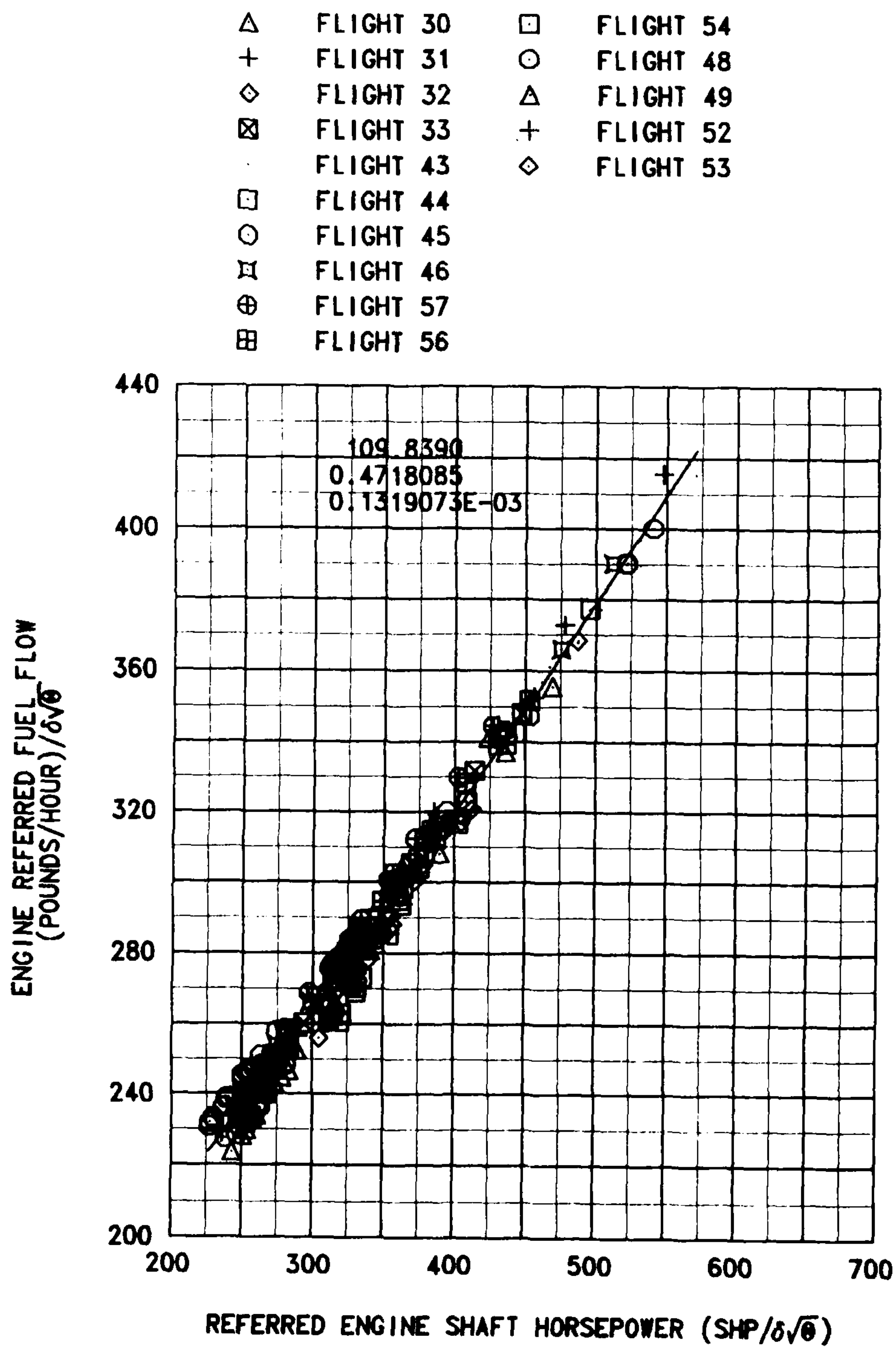
D = Aerodynamic drag (lb)
C_D = Drag coefficient (nondimensional)
A = Area of object producing drag (ft^2) (may be projected area or surface area)
V = Free stream air velocity (ft/sec)
g_c = Conversion factor $\left(\dfrac{1 \ sl-ft}{\sec^2 - lb}\right)$

Forcing a drag-producing object through the air requires power:

$$P = DV = \frac{C_D \varrho A V^3}{2g_c}$$

FIGURE D-4
ENGINE REFERRED FUEL FLOW VS. POWER

ALLISON 250-C30 S/N 900065



Where:

P = Power (ft–lb/sec)

Nondimensionalizing as before (and assuming a propulsion efficiency of unity):

$$C_P = \frac{(C_D\,A)\mu^3}{2A}$$

Combining the terms (C_D A) defines a new term, equivalent drag area (F_e)

$$F_e = \frac{2C_P\,A}{\mu^3}$$

When comparing two or more configurations, and noting the power changes between configurations

$$\Delta F_e = \frac{2\Delta C_P\,A}{\mu^3}$$

Where:

ΔF_e = change in equivalent drag area (ft^2)

13. As no knowledge of the actual C_D is available, the ΔF_e term is a mathematical concept only, and has no physical significance except that it would be equivalent in drag to an object of equal area and a C_D of unity.

14. During this evaluation, a ballast box was mounted on the cargo hook of the aircraft. The box was determined to have a ΔF_e of 3.0 ft^2. Subsequently, all data flown with the ballast box was corrected to be equivalent to flight without the box.

$$C_{P_{CORR}} = C_P - \frac{\Delta F_e\,\mu^3}{2A}$$

15. When attempting to determine the ΔF_e for the various configurations, C_P (μ) was determined for both a baseline configuration and the configuration in question.

Configuration in question:

$$C_{P_1}(\mu) = B_{0_1} + B_{1_1}\,\mu + B_{2_1}\,\mu^2 + B_{3_1}\,\mu^3$$

Baseline:

$$C_{P_2}(\mu) = B_{0_2} + B_{1_2}\,\mu + B_{3_2}\,\mu^2 + B_{3_2}\,\mu^3$$

$$\Delta C_P = C_{P_1} - C_{P_2} = (B_{0_1} - B_{0_2}) + (B_{1_1} - B_{1_2})\,\mu + (B_{2_1} - B_{2_2})\,\mu^2 + (B_{3_1} - B_{3_2})\,\mu^3$$

Therefore:

$$\Delta F_e(\mu) = 2A\left[\frac{B_{0_1} - B_{0_2}}{\mu_3} + \frac{B_{1_1} - B_{1_2}}{\mu^2} + \frac{B_{2_1} - B_{2_2}}{\mu} + B_{3_1} - B_{3_2}\right]$$

It would be desirable that ΔF_e be a relatively constant value; not dependent on μ. However, because A and C_D are both dependent on pitch attitude, and because pitch attitude is dependent upon airspeed, $\Delta F_e = \Delta F_e\ (\mu)$. However, because $\Delta C_P = \Delta C_P\ (\Delta F_e,\ \mu^3)$, a high degree of accuracy for ΔF_e is required only at high airspeeds. Therefore, ΔF_e can often be represented by a single value. The ΔF_e results for this evaluation are all approximated with a single value for each configuration.

Takeoff Performance

16. Takeoff performance tests were conducted to determine the distance required to clear 50 foot obstacle from a stationary 2 foot hover. A Del Norte radio range system was used to measure distance traveled. The aircraft was ballasted to a specific target gross weight, and then brought to a 2 foot hover. Thirty-minute power (59 psi) was applied and the aircraft was accelerated to a predetermined airspeed while maintaining the 2 foot elevation above the ground. When the airspeed was attained, the aircraft was allowed to climb at that airspeed until an altitude of 50 feet was passed. Because gross weight was held constant for each airspeed within a data set, and test conditions (temperature and pressure altitude) varied very little, each data set can be assumed to be at a constant C_T. A reference C_P was obtained from the 2 foot hover curve at the appropriate value of C_T. The test value of C_P was then calculated and the difference determined:

$$\Delta C_P = C_{P_{test}} - C_{P_{2'hover}}$$

A carpet plot was then made of ΔC_P, airspeed, and distance. That carpet plot is presented in appendix E.

HANDLING QUALITIES

Control Positions in Trimmed Forward Flight

17. Control positions and aircraft pitch attitude as functions of calibrated airspeed were determined during level flight performance. Maximum speed attained was determined by the lesser of V_{NE} or 59 psi torque pressure.

Static Longitudinal Stability

18. The static longitudinal stability tests were accomplished by establishing the trim condition in ball-centered flight and then varying control positions to obtain airspeed changes about the trim airspeed with collective control held fixed at the trim value. The airspeed range of interest was approximately ± 20 knots from trim. Altitude was allowed to vary as required during the test.

Static Lateral-Directional Stability

19. These tests were conducted by establishing the trim condition and then varying sideslip angle incrementally up to the preestablished limits. During each test, collective control position and airspeed were held constant and altitude allowed to vary as required.

Maneuvering Stability

20. This test was accomplished by establishing the trim condition and then incrementally increasing load factor by increasing roll attitude while holding airspeed and collective control position constant and allowing altitude to vary as necessary. Turns were made in both directions. Symmetrical pushovers and pullups were also made to evaluate the aircraft during low and high load factors established by cyclic control in level flight.

Dynamic Stability

21. Dynamic stability was qualitatively evaluated to determine both the short and long-period characteristics. The short-period response was evaluated by use of longitudinal, lateral, and directional pulse inputs and by releases from steady-heading sideslips. The long-period longitudinal dynamic response was evaluated by slowly returning the flight controls to trim position following a change of 10 knots and 5 knots indicated airspeed from the trim airspeed and then holding controls fixed while recording the aircraft response.

Controllability

22. Controllability testing was conducted by first establishing a trim condition and then making a step-type control input which was held until the aircraft had reached a steady rate. Inputs of varying size were made in each direction of the longitudinal and lateral cyclic controls and the directional control.

23. Data were analyzed by first reading from time history data of the maneuver the following parameters:

- Control input size
- Maximum angular velocity achieved
- Time from initial angular velocity change to 63% of the maximum angular velocity
- Attitude change in one second from control input (1/2 second for roll)
- Maximum angular acceleration
- Time from control input to maximum angular acceleration

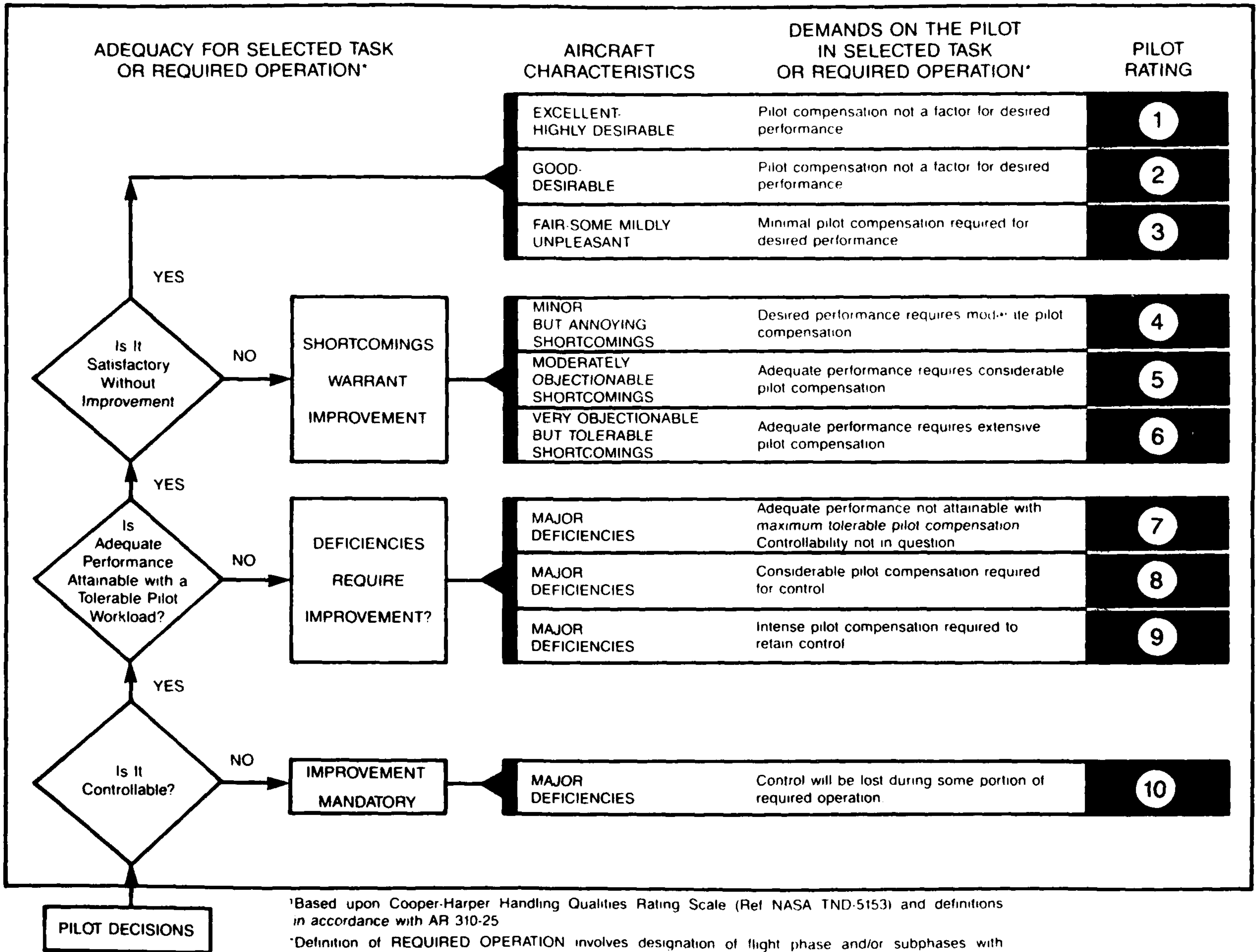
DEFINITIONS

Qualitative Rating Scales

24. A Handling Qualities Rating Scale (HQRS) was used to augment pilot comments and is presented as figure D-5. The Vibration Rating Scale (VRS) was used to augment pilot comments on vibrations and is presented in figure D-6.

Shortcoming

25. A shortcoming is defined as an imperfection or malfunction occurring during the life cycle of equipment which must be reported and which should be corrected to increase efficiency and to render the equipment completely serviceable. It will not cause an



[1]Based upon Cooper-Harper Handling Qualities Rating Scale (Ref NASA TND-5153) and definitions in accordance with AR 310-25

*Definition of REQUIRED OPERATION involves designation of flight phase and/or subphases with accompanying conditions

Figure D-5. Handling Qualities Rating Scale

DEGREE OF VIBRATION	DESCRIPTION[1]	PILOT RATING
No vibration		0
Slight	Not apparent to experienced aircrew fully occupied by their tasks, but noticeable if their attention is directed to it or if not otherwise occupied.	1 2 3
Moderate	Experienced aircrew are aware of the vibration but it does not affect their work, at least over a short period.	4 5 6
Severe	Vibration is immediately apparent to experienced aircrew even when fully occupied. Performance of primary task is affected or tasks can only be done with difficulty.	7 8 9
Intolerable	Sole preoccupation of aircrew is to reduce vibration level.	10

[1] Based upon the Rating Scale for Qualitative Assessment of Vibration obtained from the Defence Standard 00-970, Design and Airworthiness Requirements for Service Aircraft, Volume 2 - Rotorcraft, Issue 1, Dated 31 July 1984.

Figure D-6. Vibration Rating Scale

immediate breakdown, jeopardize safe operation, or materially reduce the usability of the material or end product.

Deficiency

26. A deficiency is defined as a defect or malfunction discovered during the life cycle of an item of equipment that constitutes a safety hazard to personnel; will result in serious damage to the equipment if operation is continued; or indicates improper design or other cause of failure of an item or part, which seriously impairs the equipment's operational capability.

APPENDIX E. TEST DATA

INDEX

FIGURE E-1

OGE HOVER CEILING

AH-6G USA S/N 84-24319

ALLISON 250-C30 ENGINE

NOTES:
1. ROTOR SPEED = 477 RPM
2. EPS EMPTY CONFIGURATION
3. 30-MINUTE TAKEOFF POWER FROM FIGURE D-2
4. HOVER PERFORMANCE FROM FIG E-2
5. DASHED LINES FROM EXTRAPOLATED HOVER DATA

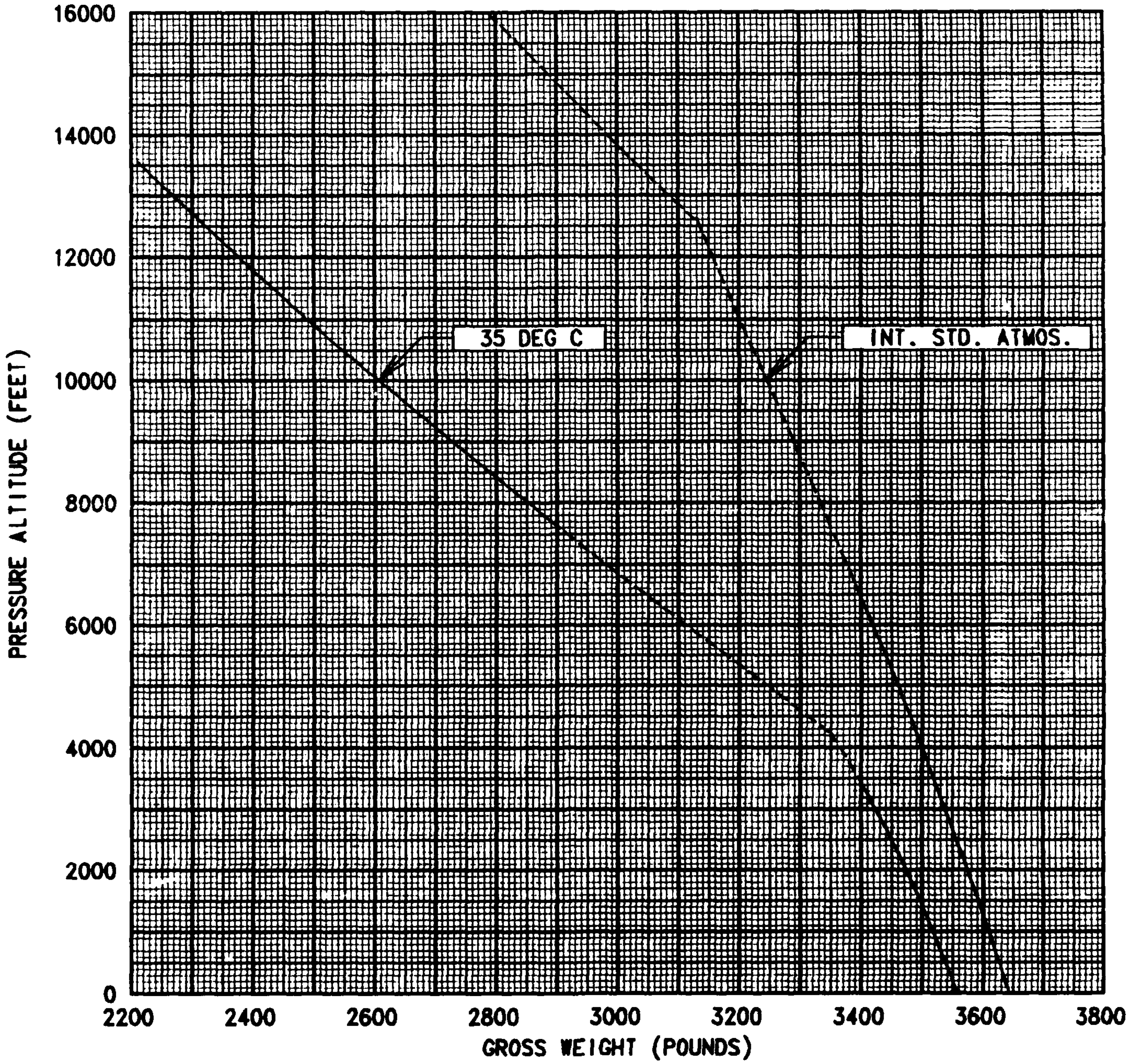


FIGURE E-2
HOVER PERFORMANCE
AH-6G USA S/N 84-24319

SYMBOL	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	CONFIGURATION	SKID HEIGHT (FT)
+	-140	8.0	477	EPS EMPTY	75
△	2150	11.0	477	EPS EMPTY	75
⊞	6820	31.0	477	EPS EMPTY	75
◇	-200	8.0	477	EPS EMPTY	6
■	2090	11.0	477	EPS EMPTY	6
⌛	6780	30.0	477	EPS EMPTY	6
⊡	-210	8.0	477	EPS EMPTY	2
○	2080	11.0	477	EPS EMPTY	2
●	6780	30.0	477	EPS EMPTY	2

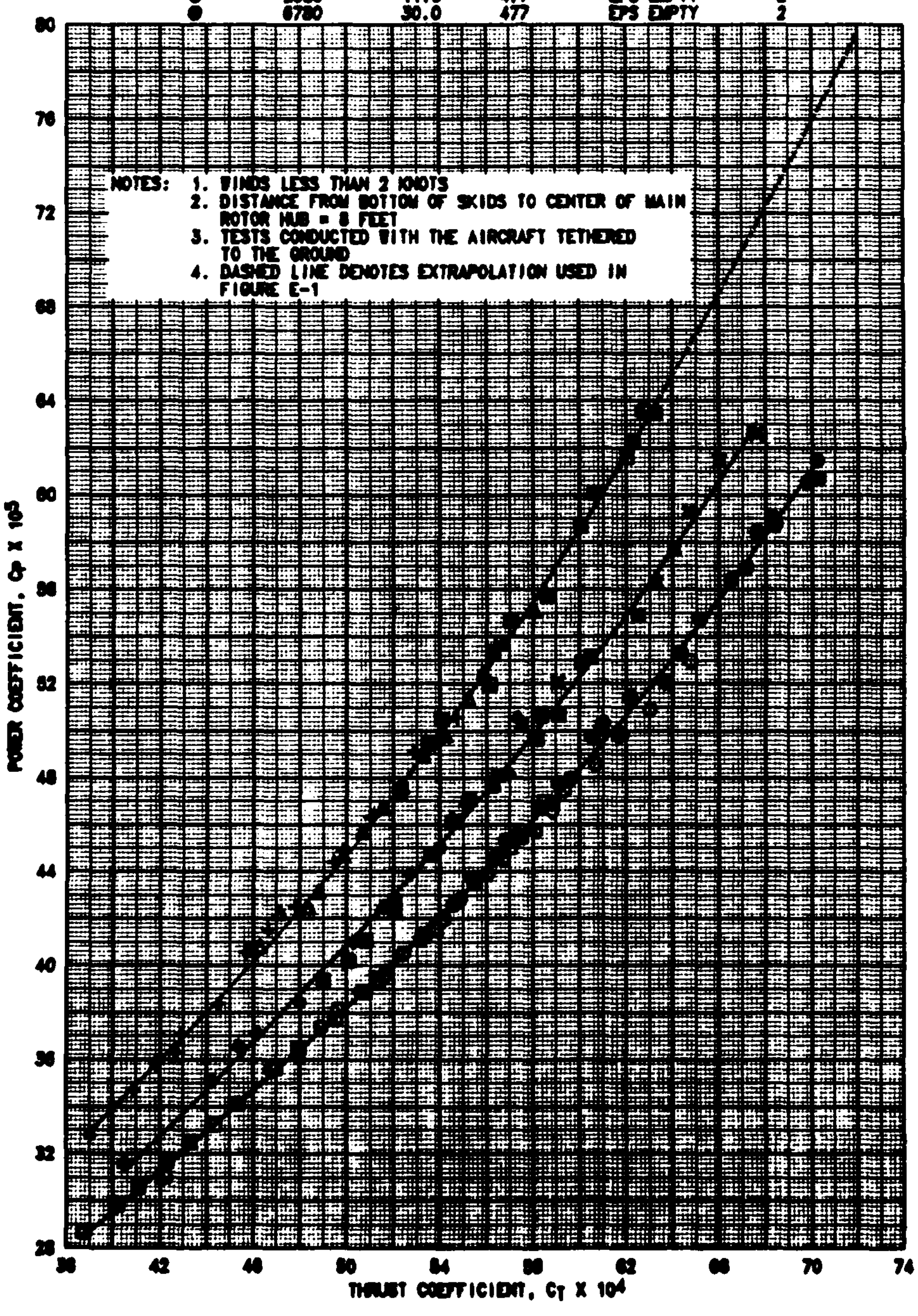


FIGURE E-3
HOVER PERFORMANCE
AH-6G USA S/N 84-24319

SYMBOL	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	CONFIGURATION	SKID HEIGHT (FT)
△	4600	27.0	477	EPS FULL	75
⊠	4540	26.5	477	EPS FULL	6
⊙	4540	26.0	477	EPS FULL	2

NOTES:
1. WINDS LESS THAN 2 KNOTS
2. DISTANCE FROM BOTTOM OF SKIDS TO CENTER OF MAIN ROTOR HUB = 8 FEET
3. TESTS CONDUCTED WITH THE AIRCRAFT TETHERED TO THE GROUND
4. DASHED LINES ARE EPS EMPTY FROM FIGURE E-2

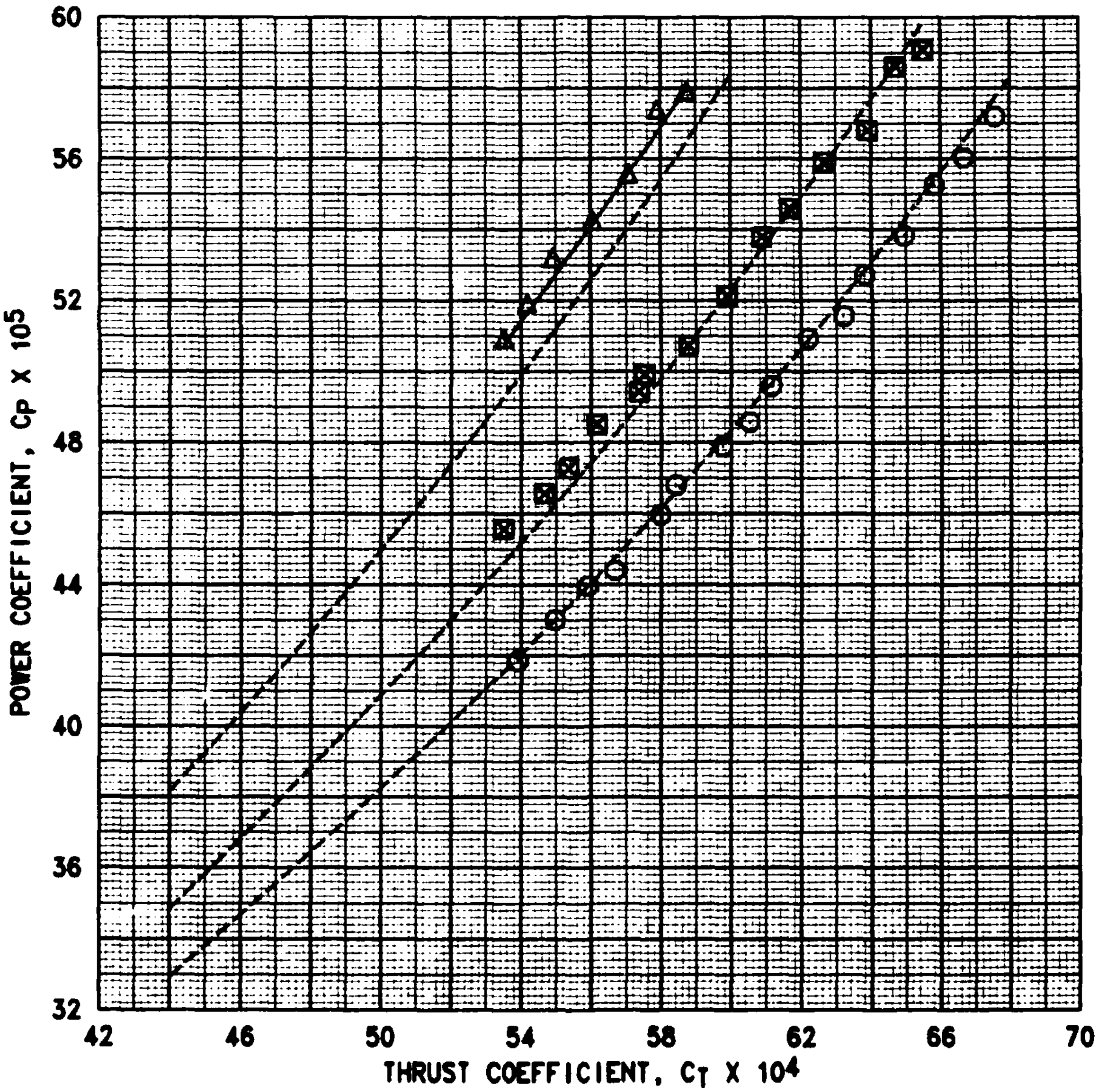


FIGURE E-4
HOVER PERFORMANCE
AH-6G USA S/N 84-24319

SYMBOL	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	CONFIGURATION	SKID HEIGHT (FT)
△	3900	25.5	477	PLANK WITH 2	75
⊠	3830	25.0	477	M-261 19-SHOT	6
⊙	3790	25.0	477	ROCKET LAUNCHERS	2

NOTES:
1. WINDS LESS THAN 2 KNOTS
2. DISTANCE FROM BOTTOM OF SKIDS TO CENTER OF MAIN ROTOR HUB = 8 FEET
3. TESTS CONDUCTED WITH THE AIRCRAFT TETHERED TO THE GROUND
4. DASHED LINES ARE EPS EMPTY FROM FIGURE E-2

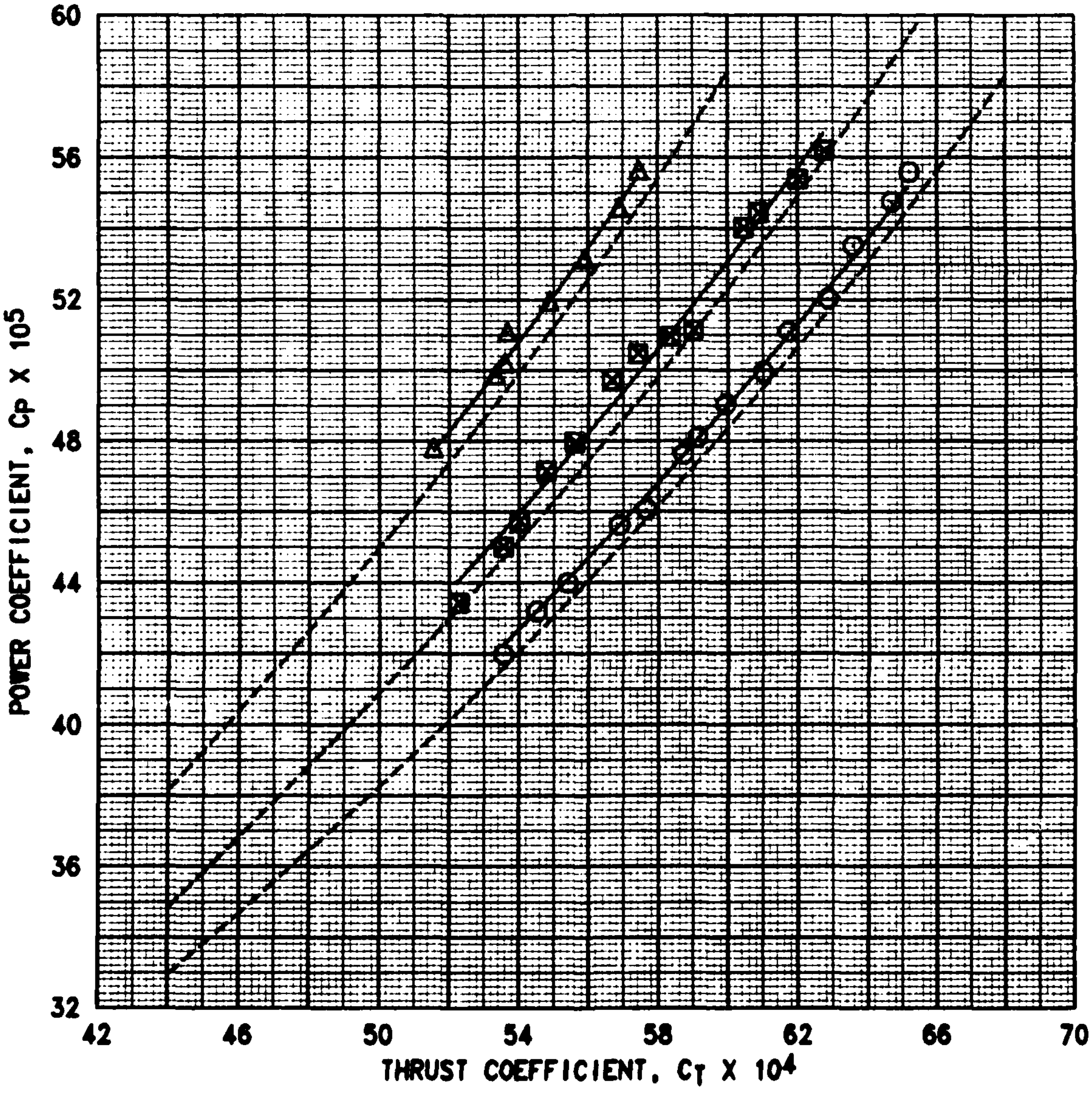


FIGURE E-5
TAKEOFF PERFORMANCE
AH6-G USA S/N 84-24319

NOTES:
1) CONFIGURATION: EPS EMPTY
2) DATA OBTAINED DURING LEVEL ACCELERATION FROM 2 FT HOVER
3) CURVES DERIVED FROM DATA IN FIGS E-2 AND E-6
4) 30-MINUTE TRANSMISSION LIMIT OF 59.6 PSI (425 SHP) WAS OBSERVED

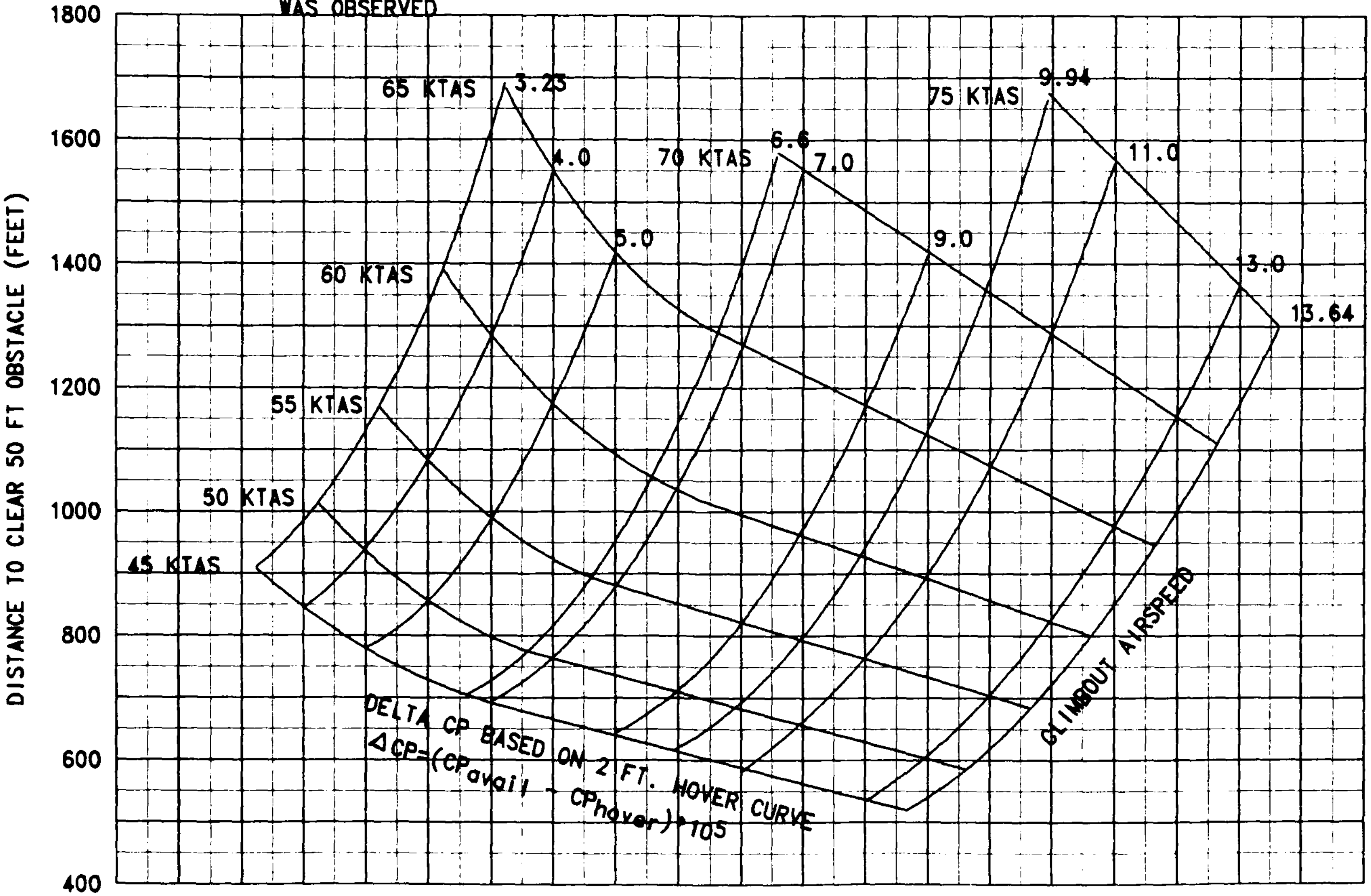


FIGURE E-6

TAKEOFF PERFORMANCE

AH-6G USA S/N 84-24319

SYM	AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	CONFIGURATION
□	3910	101.2	1880	9.5	477	EPS EMPTY
○	3730	101.2	2160	12.5	477	EPS EMPTY
△	3540	101.2	2490	15.0	477	EPS EMPTY
+	3310	101.2	2490	15.0	477	EPS EMPTY

NOTES: 1) MAXIMUM TAKEOFF POWER 59 PSI TORQUE = 425 SHP
2) LEVEL ACCELERATION WITH CONSTANT CLIMB SPEED
3) WINDS LESS THAN 2 KNOTS
4) CURVES GENERATED FROM FIGURE E-5

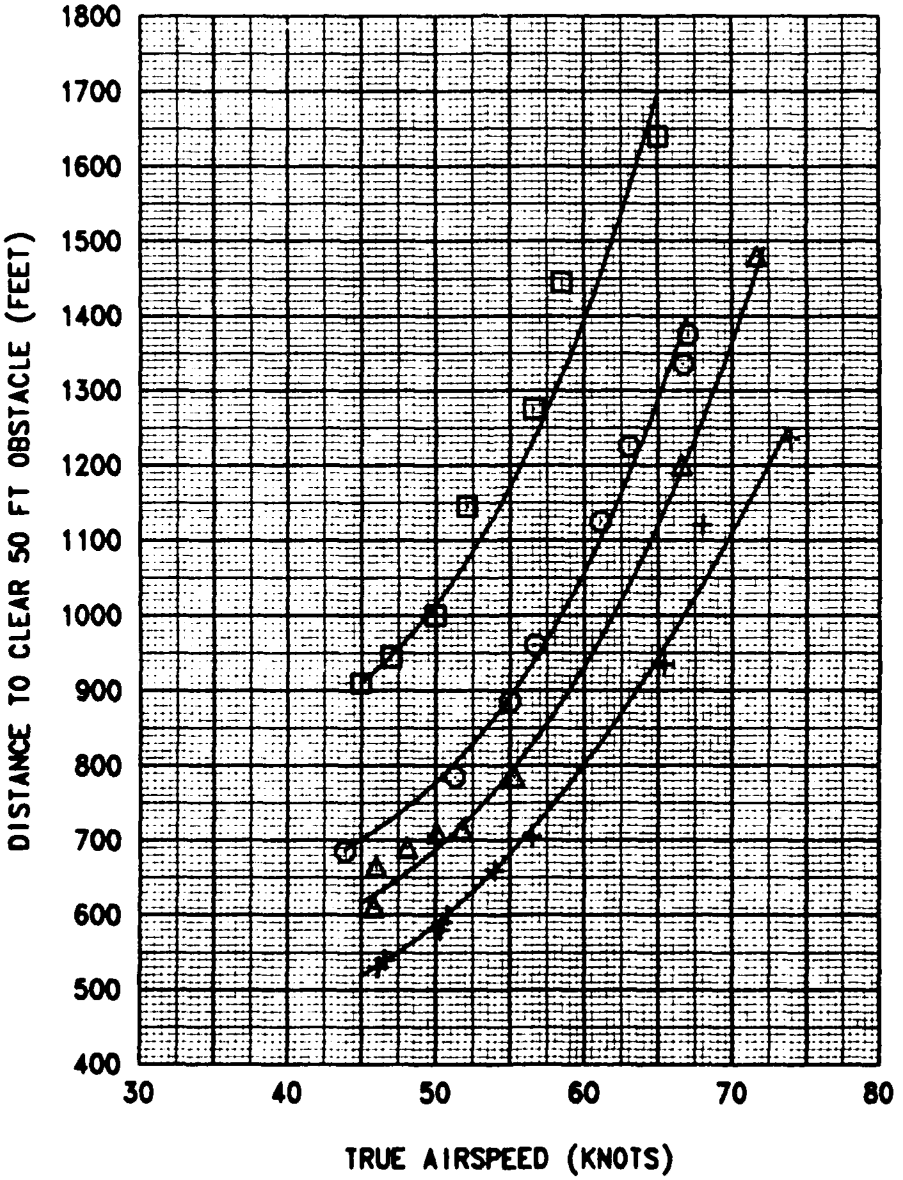


FIGURE E-7

NONDIMENSIONAL LEVEL FLIGHT PERFORMANCE

AH-6G USA S/N 84-24319

NOTES: 1) CONFIGURATION EPS EMPTY

2) ZERO SIDESLIP TRIM CONDITION

3) MID LONGITUDINAL AND LATERAL CG

4) CURVES DERIVED FROM FIGURES E-9 THRU E-13

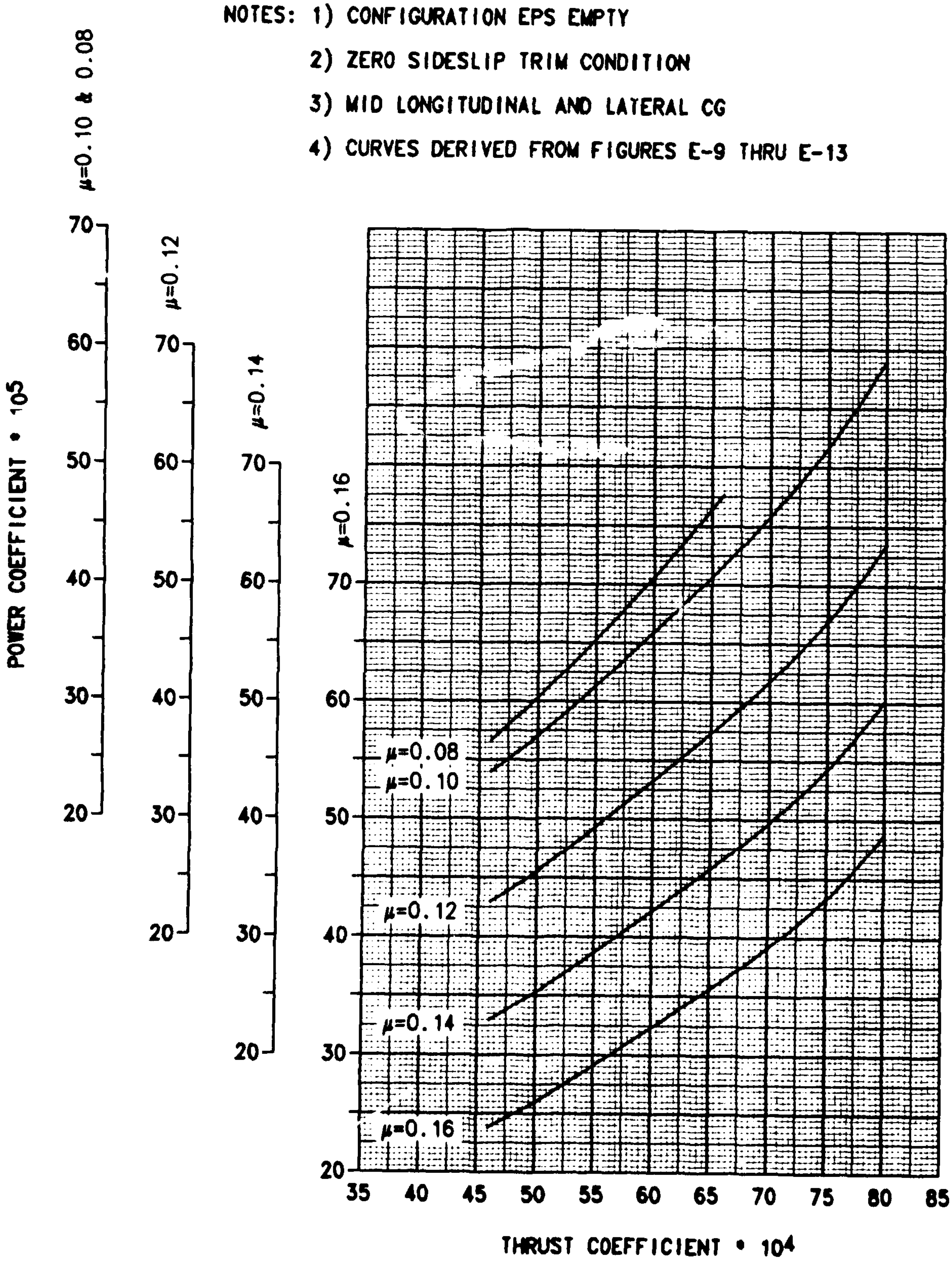


FIGURE E-8
NONDIMENSIONAL LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

NOTES: 1) CONFIGURATION EPS EMPTY
2) ZERO SIDESLIP TRIM CONDITION
3) MID LONGITUDINAL AND LATERAL CG
4) CURVES DERIVED FROM FIGURES E-9 THRU E-13

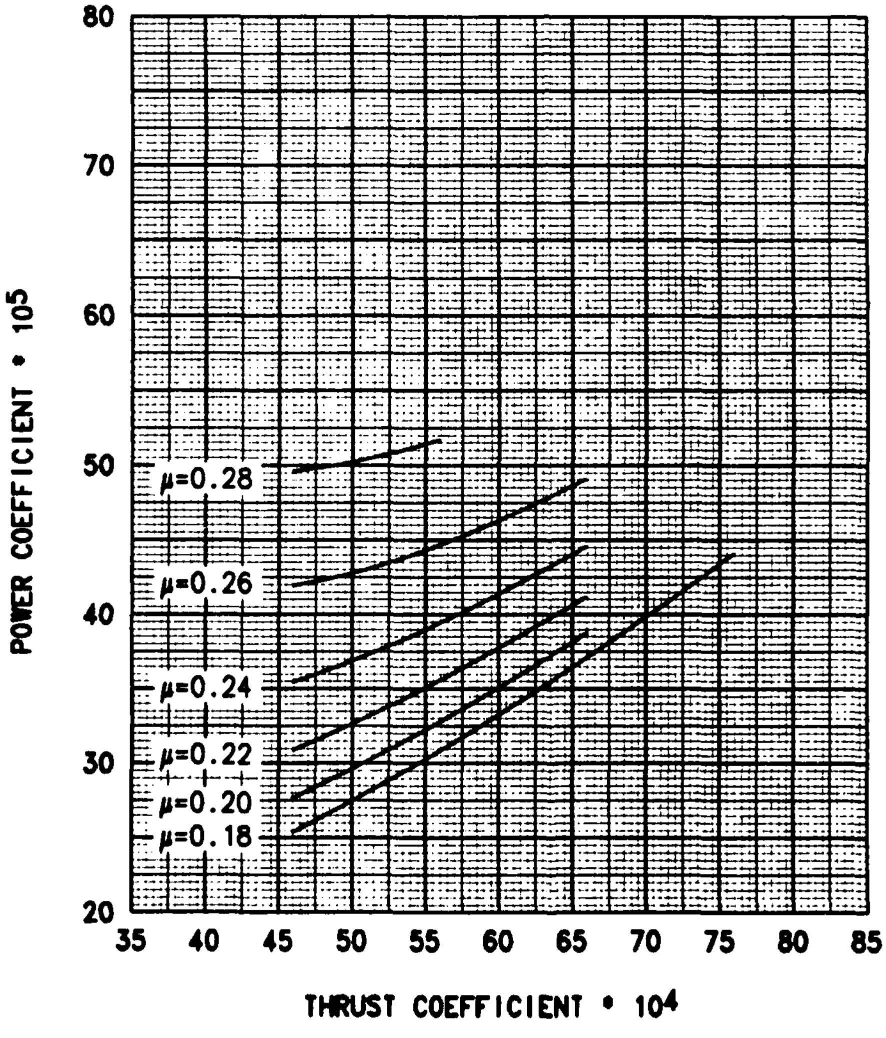


FIGURE E-9
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
2740	101.9(MID)	2980	3.0	477	0.004592	EPS EMPTY

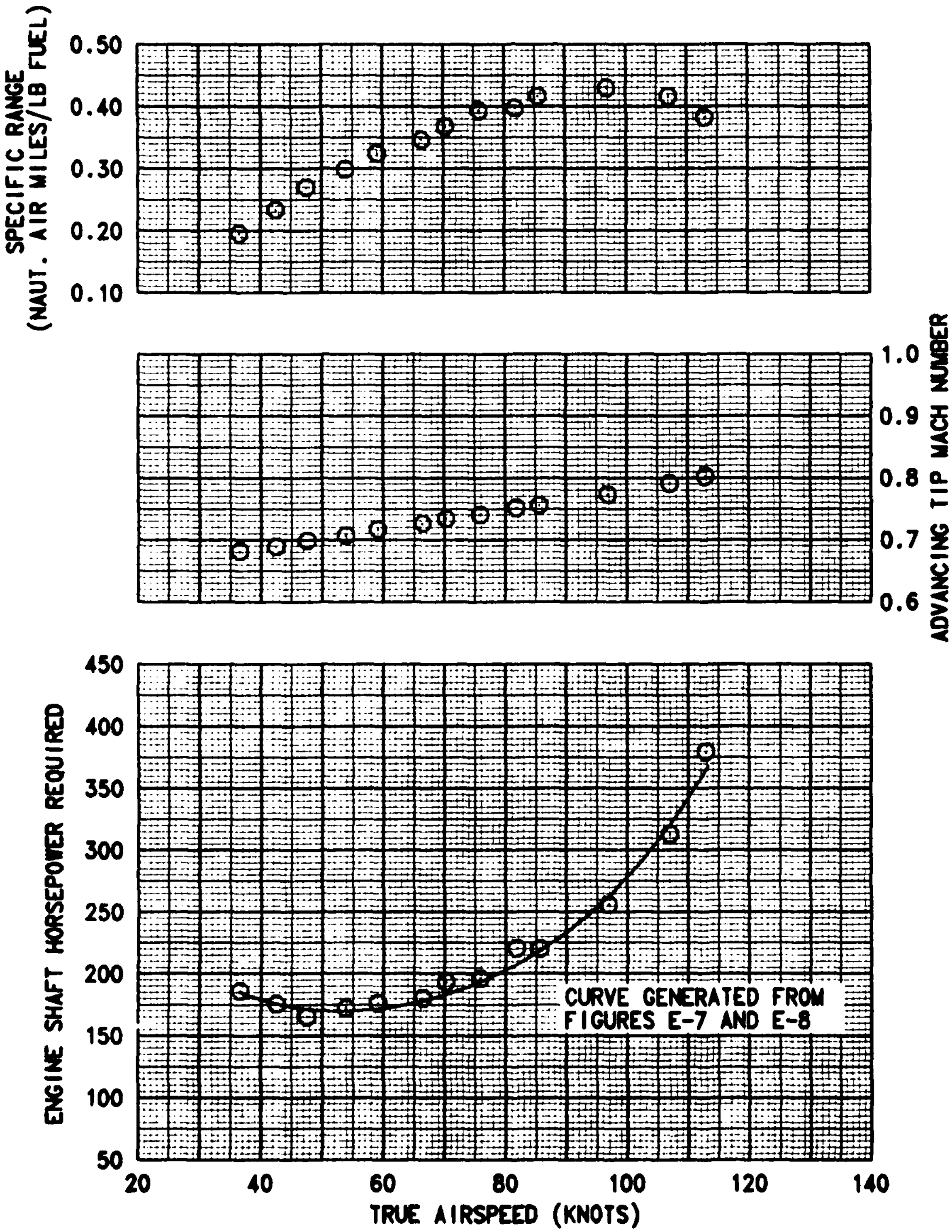


FIGURE E-10
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3040	100.7(MID)	6100	11.5	477	0.005599	EPS EMPTY

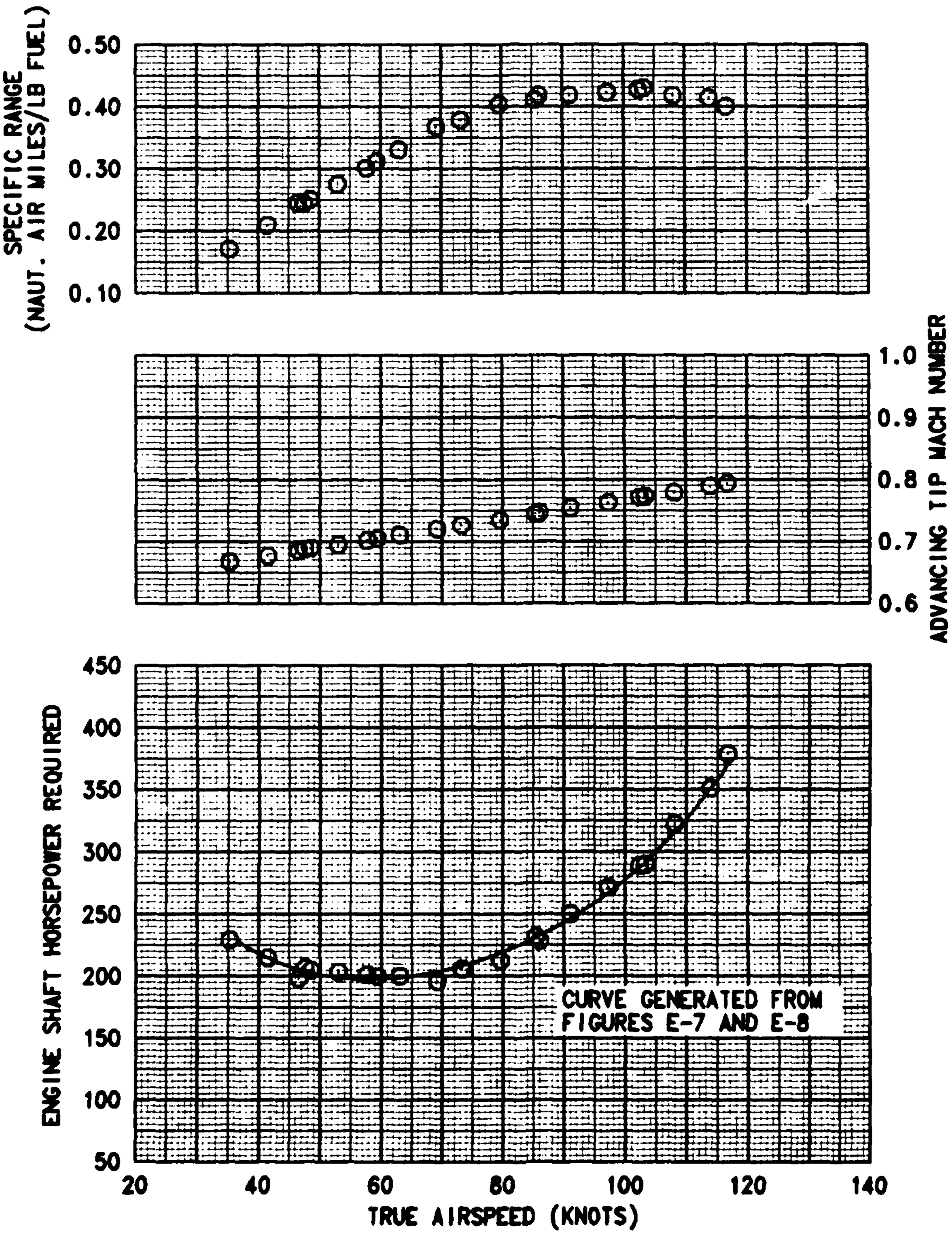


FIGURE E-11
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3400	101.2(MID)	7790	7.0	477	0.006595	EPS EMPTY

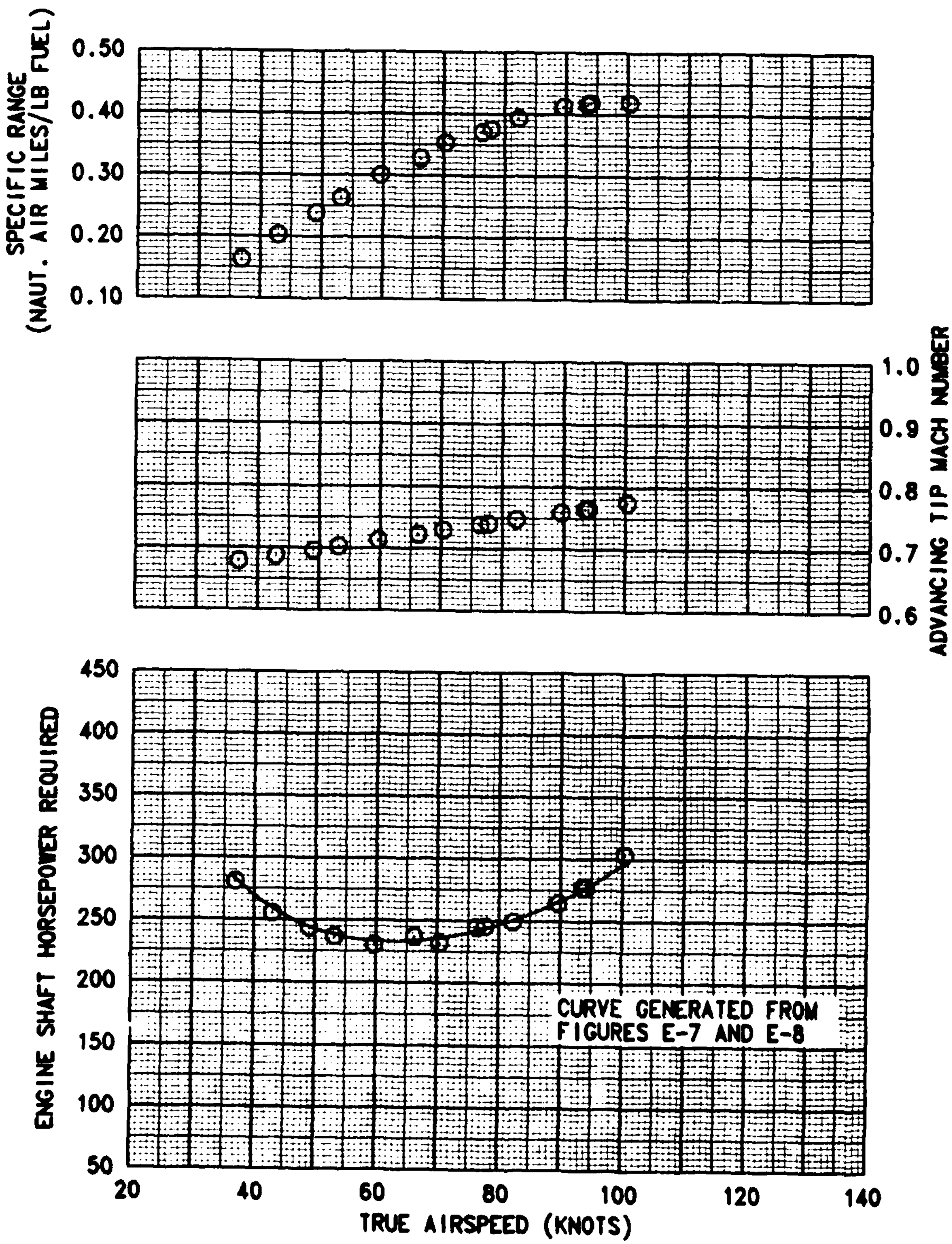


FIGURE E-12

LEVEL FLIGHT PERFORMANCE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3760	101.2(MID)	9110	5.0	477	0.007600	EPS EMPTY

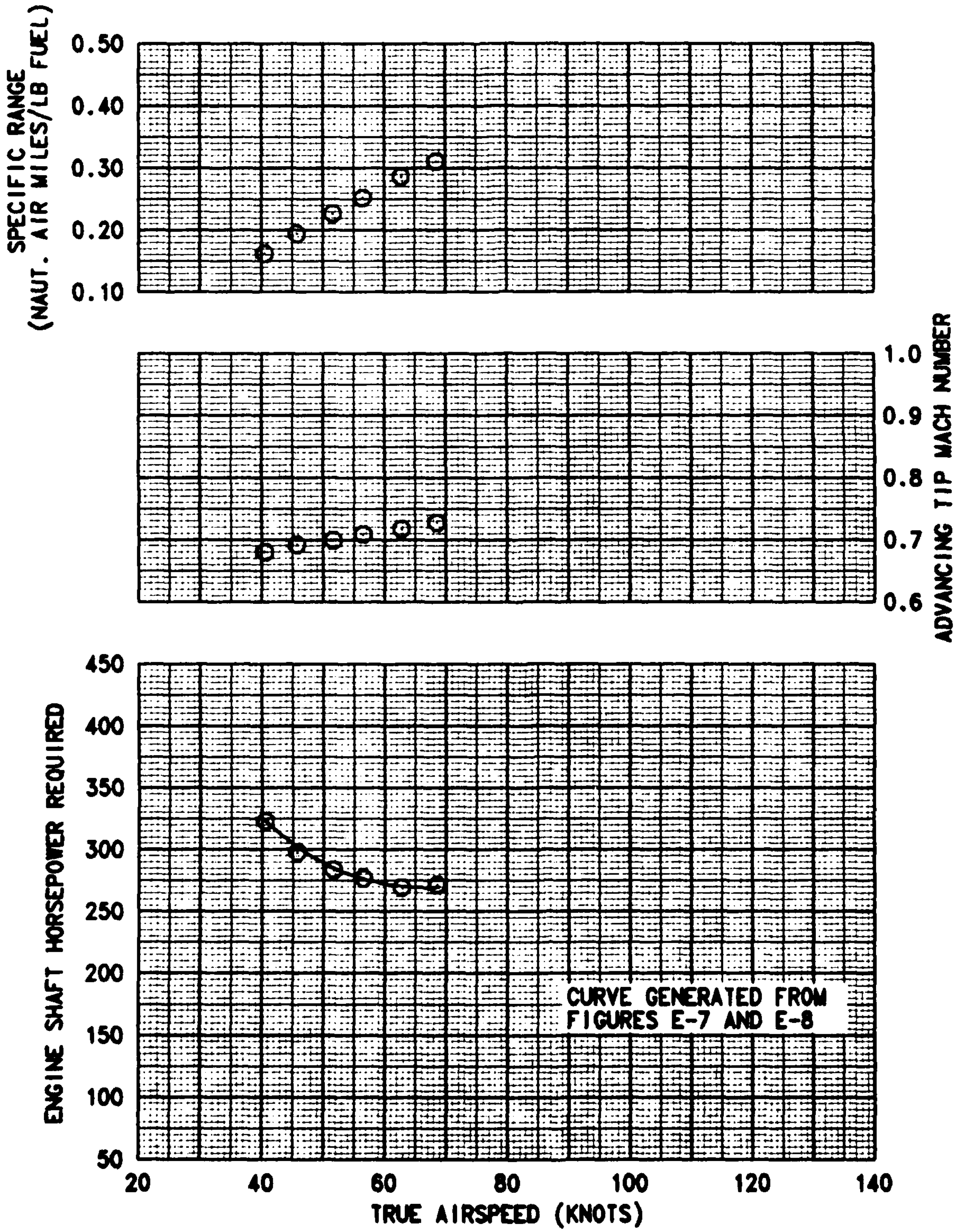


FIGURE E-13
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3860	101.1(MID)	9910	3.0	477	0.008000	EPS EMPTY

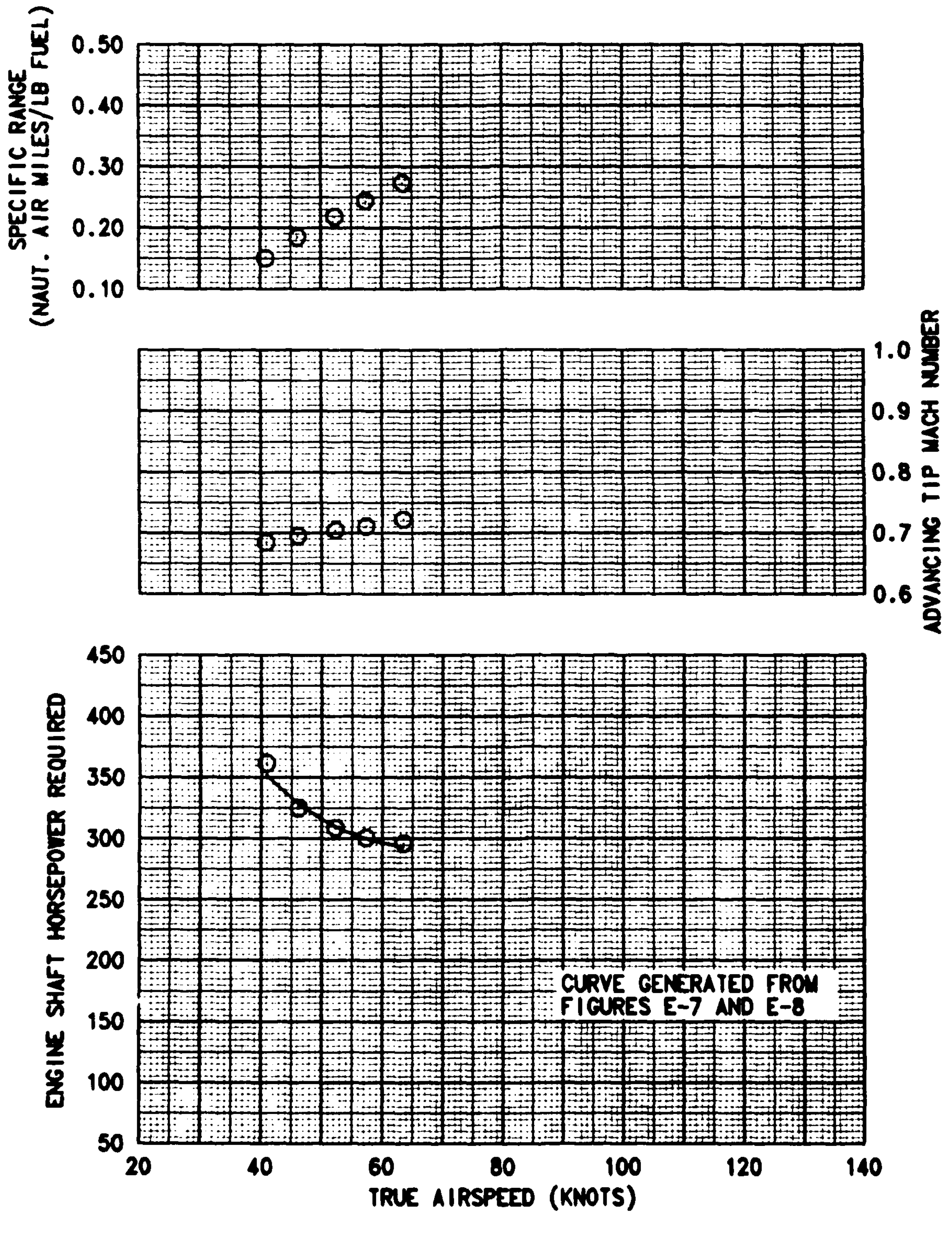


FIGURE E-14
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3060	101.0(MID)	5890	11.0	477	0.005599	CLEAN

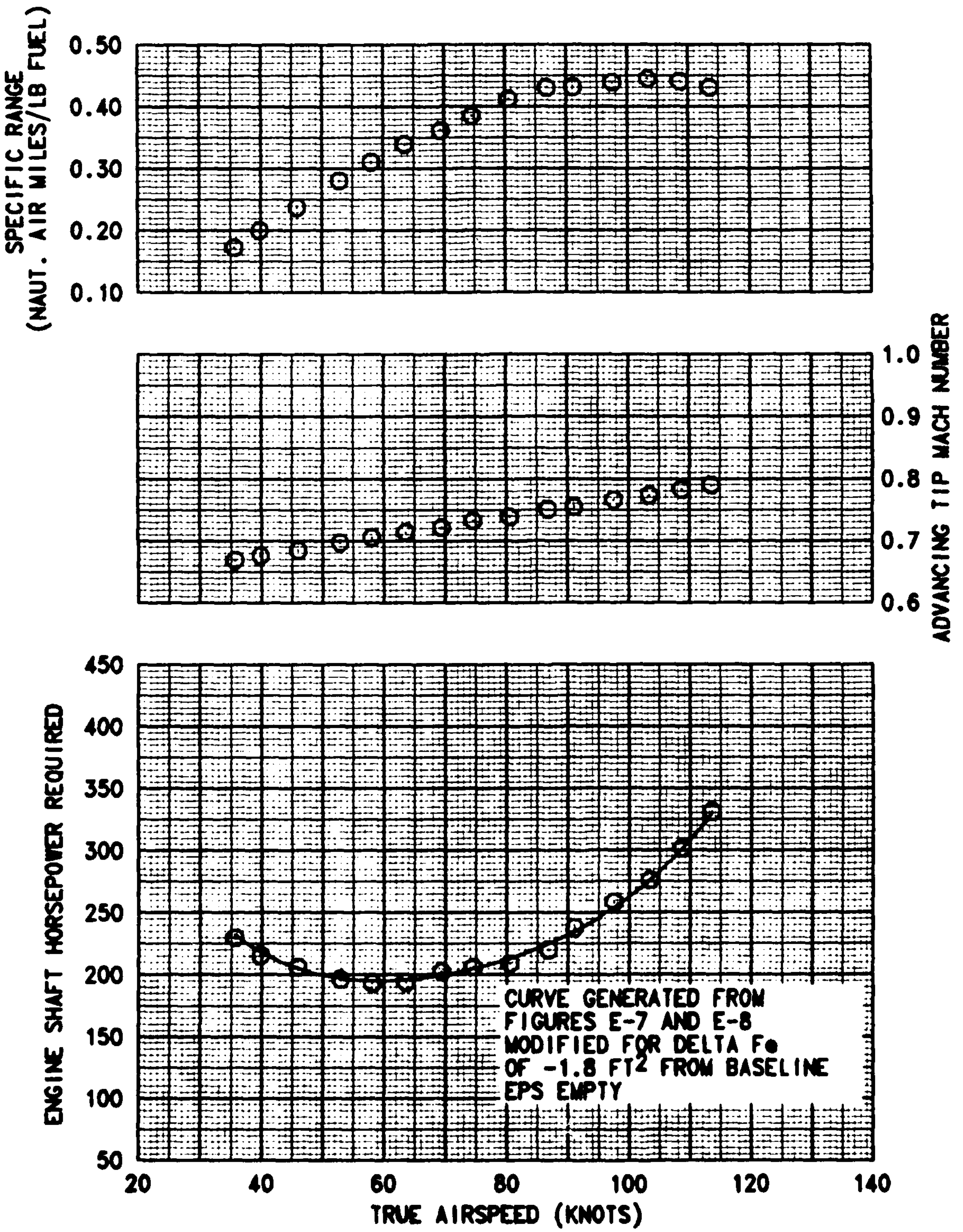


FIGURE E-15
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3380	102.1(MID)	7990	18.0	477	0.006597	CLEAN

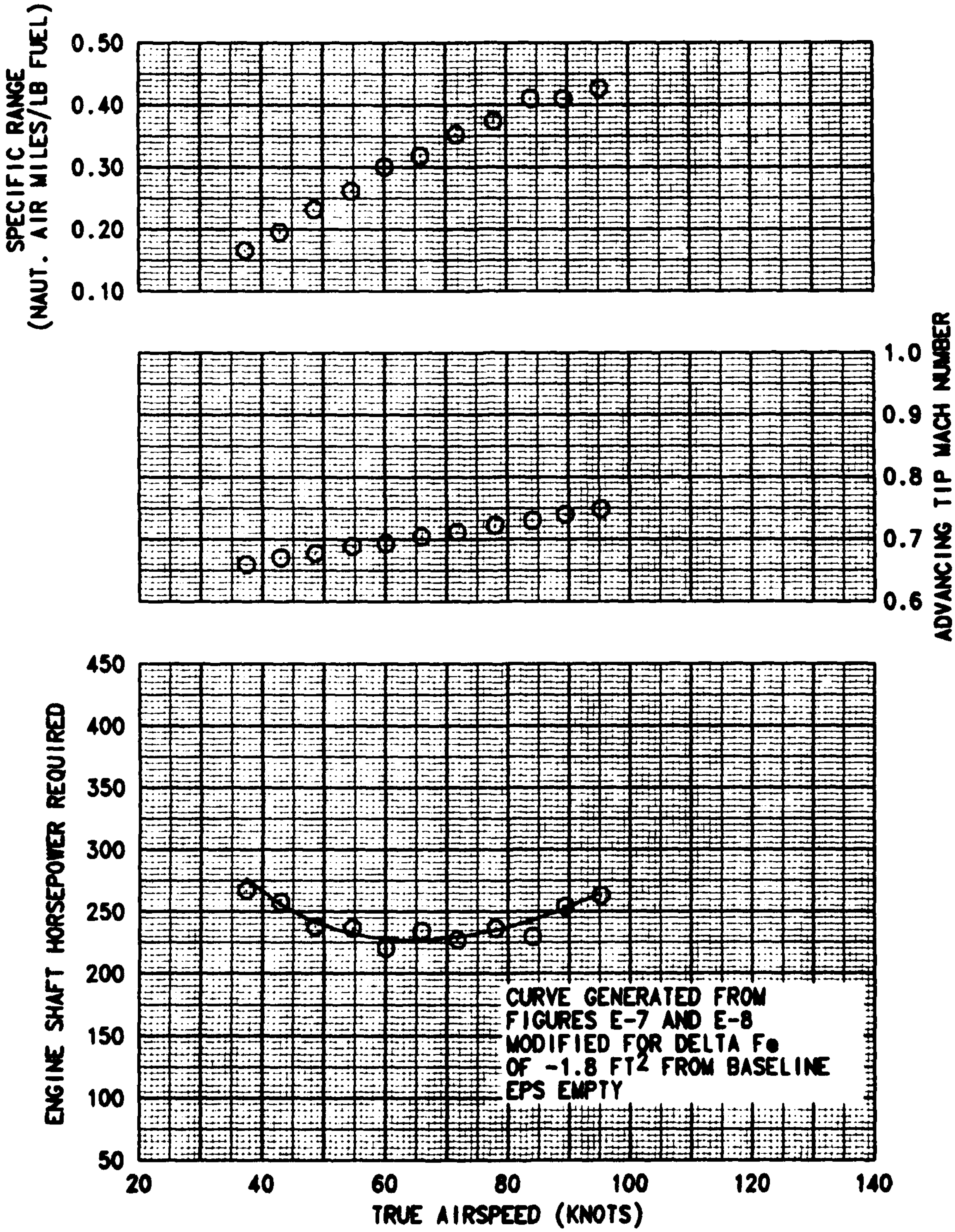


FIGURE E-16
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3860	101.1(MID)	8260	10.0	477	0.007597	CLEAN

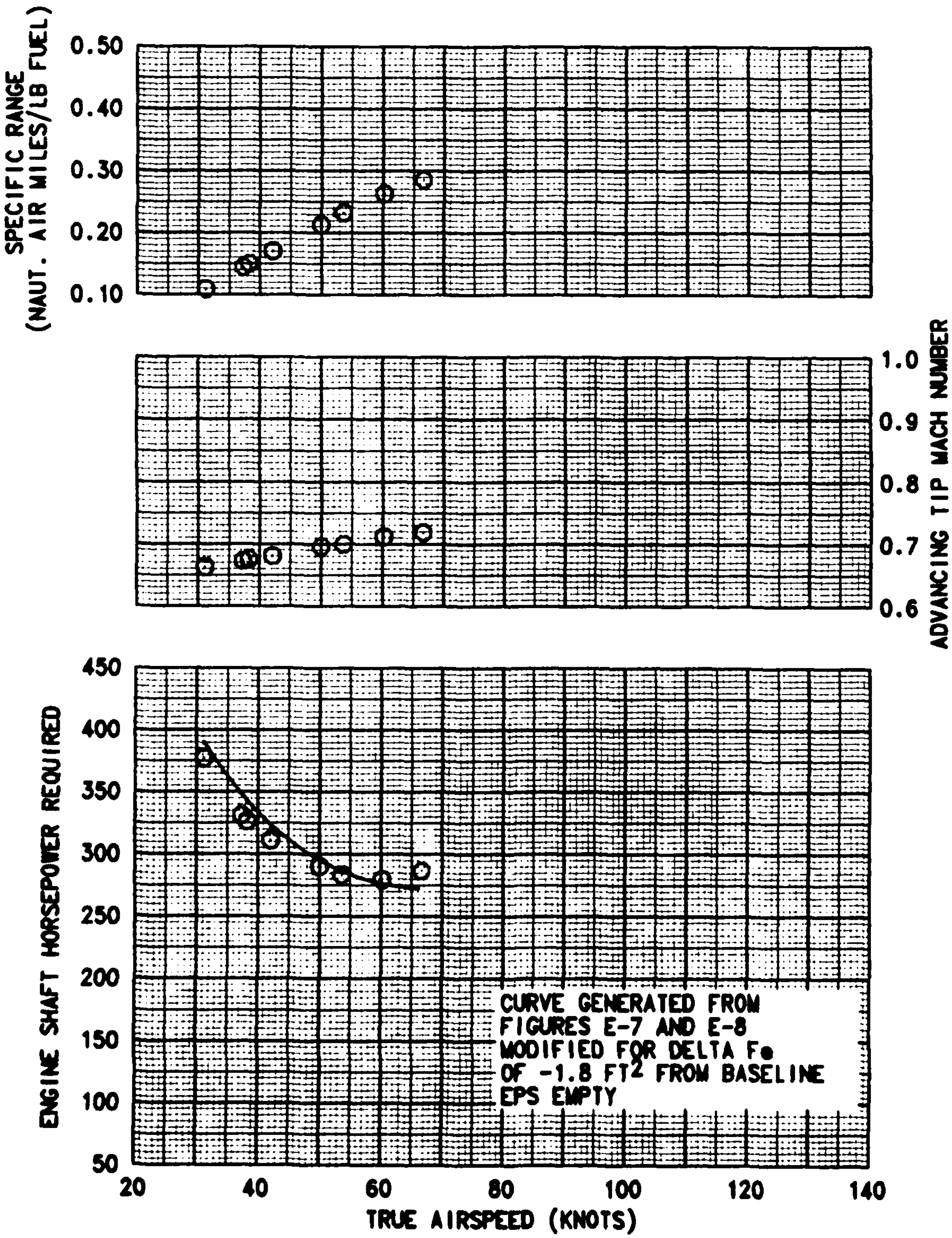


FIGURE E-17

LEVEL FLIGHT PERFORMANCE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3000	100.5(MID)	6550	5.5	477	0.005601	EPS + 4 DOORS

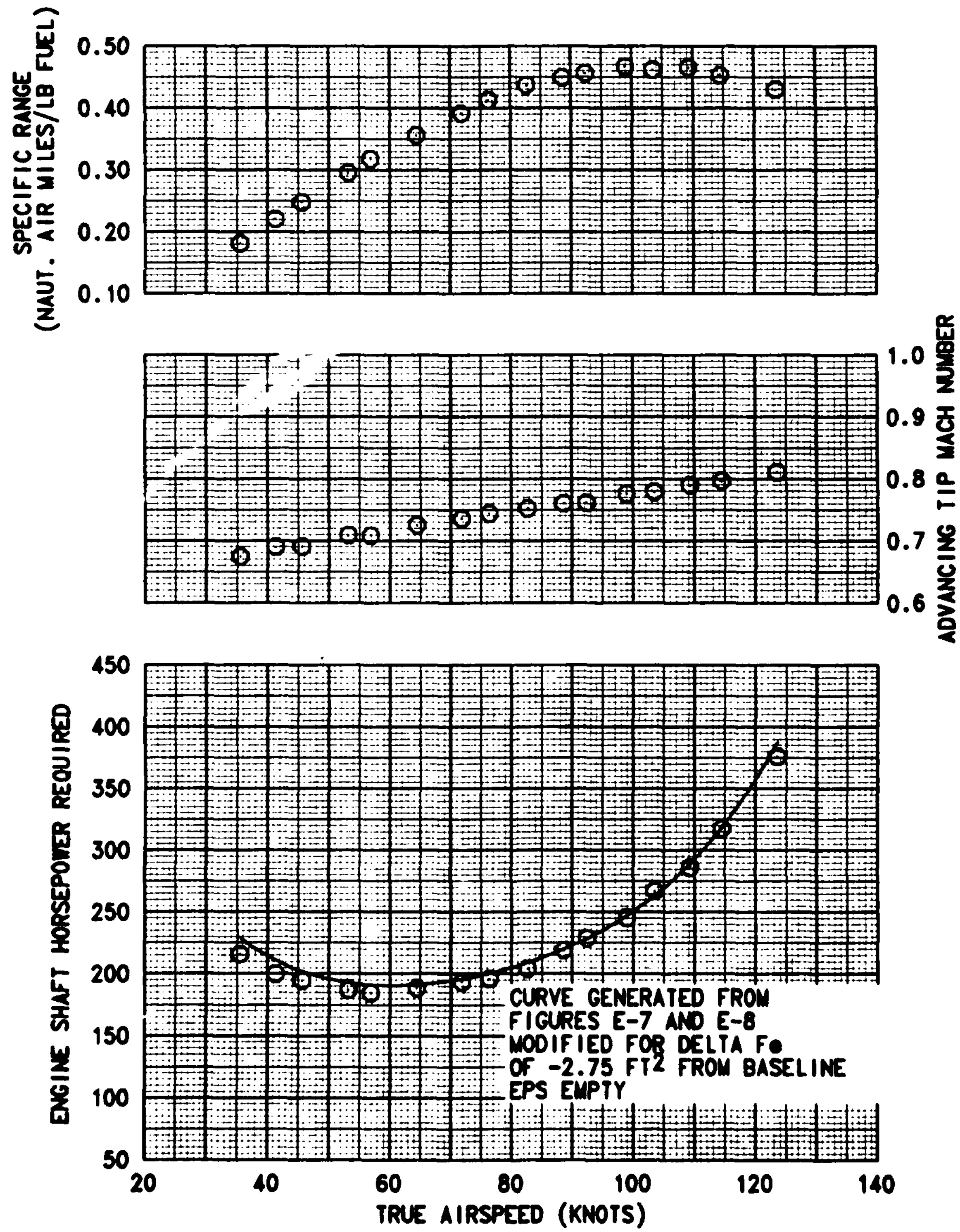


FIGURE E-18
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3320	101.1(MID)	8580	17.5	477	0.006601	EPS + 4 DOORS

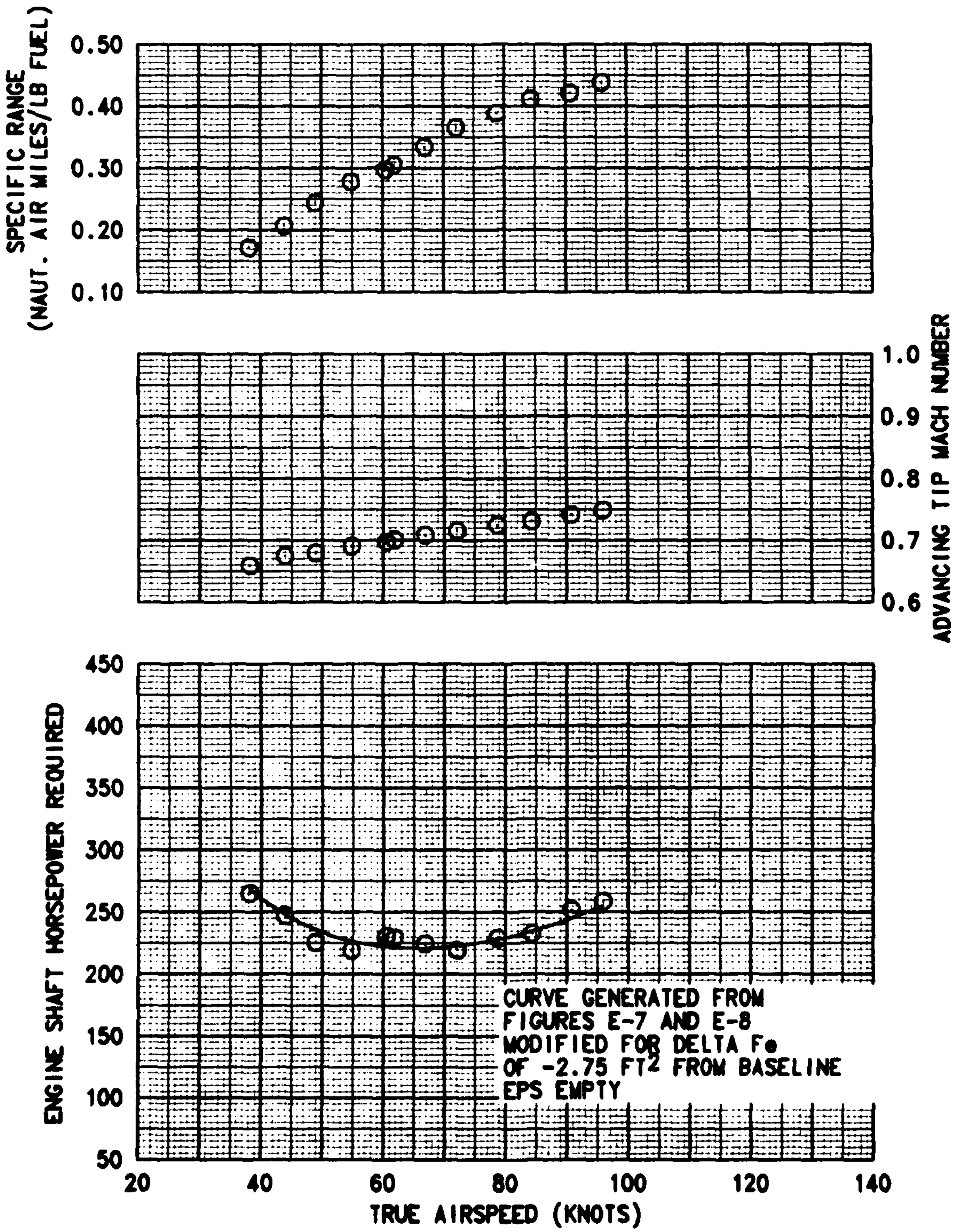


FIGURE E-19
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3310	100.5(MID)	2690	8.0	477	0.005500	40mm/7-SHOT

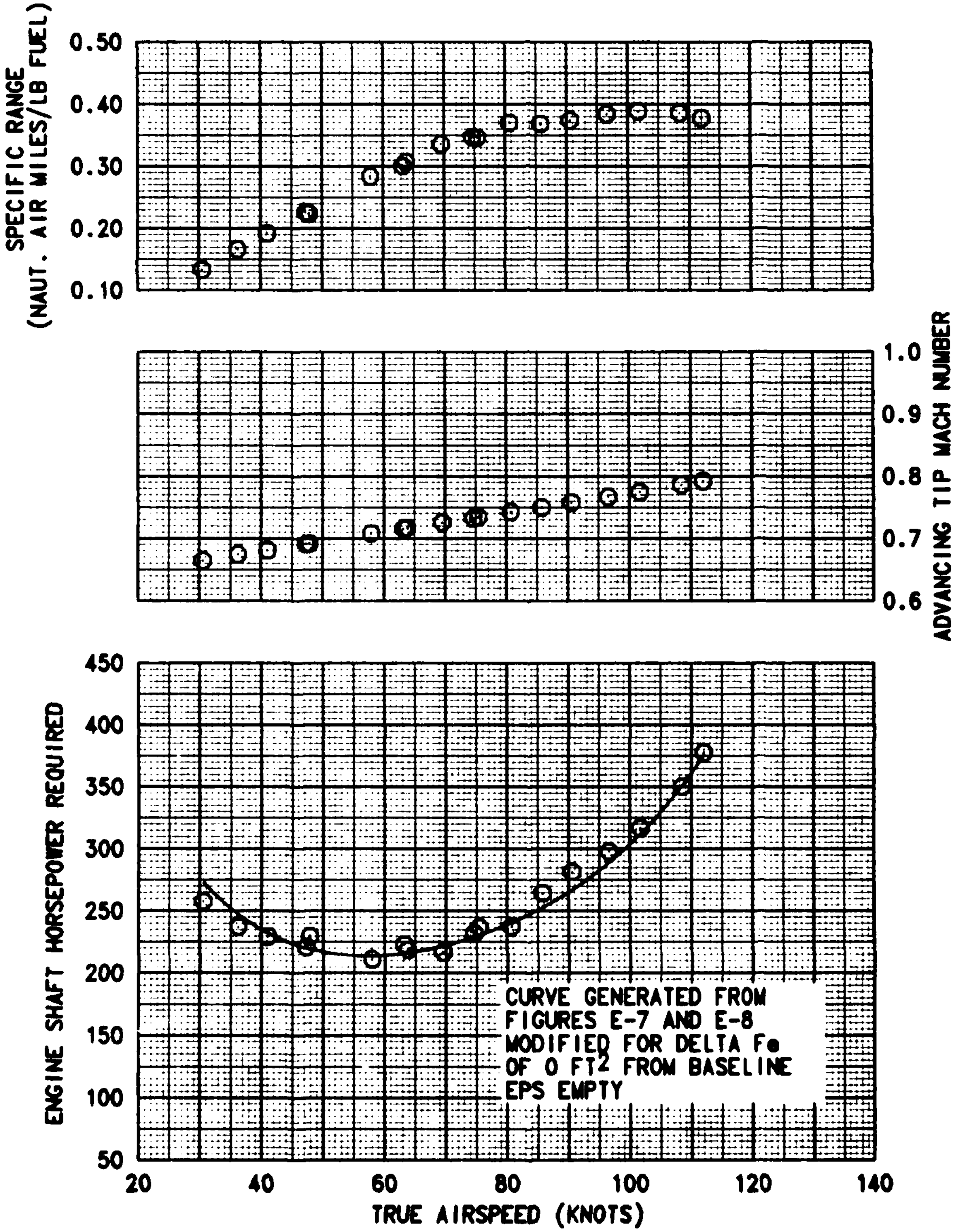


FIGURE E-20
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3320	100.7(MID)	8560	4.5	477	0.006596	40mm/7-SHOT

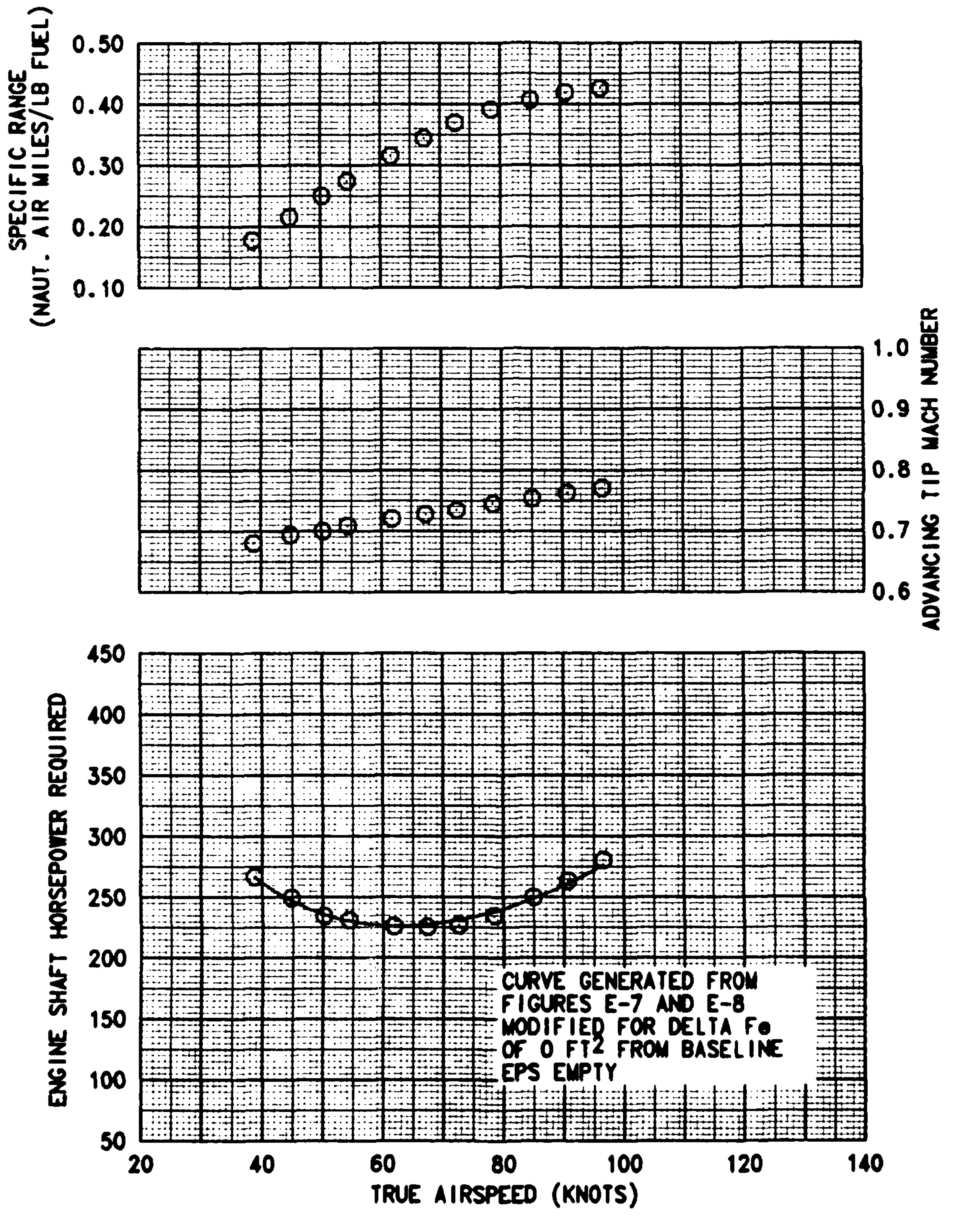


FIGURE E-21
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3420	100.4(MID)	2100	12.5	477	0.005583	EPS FULL

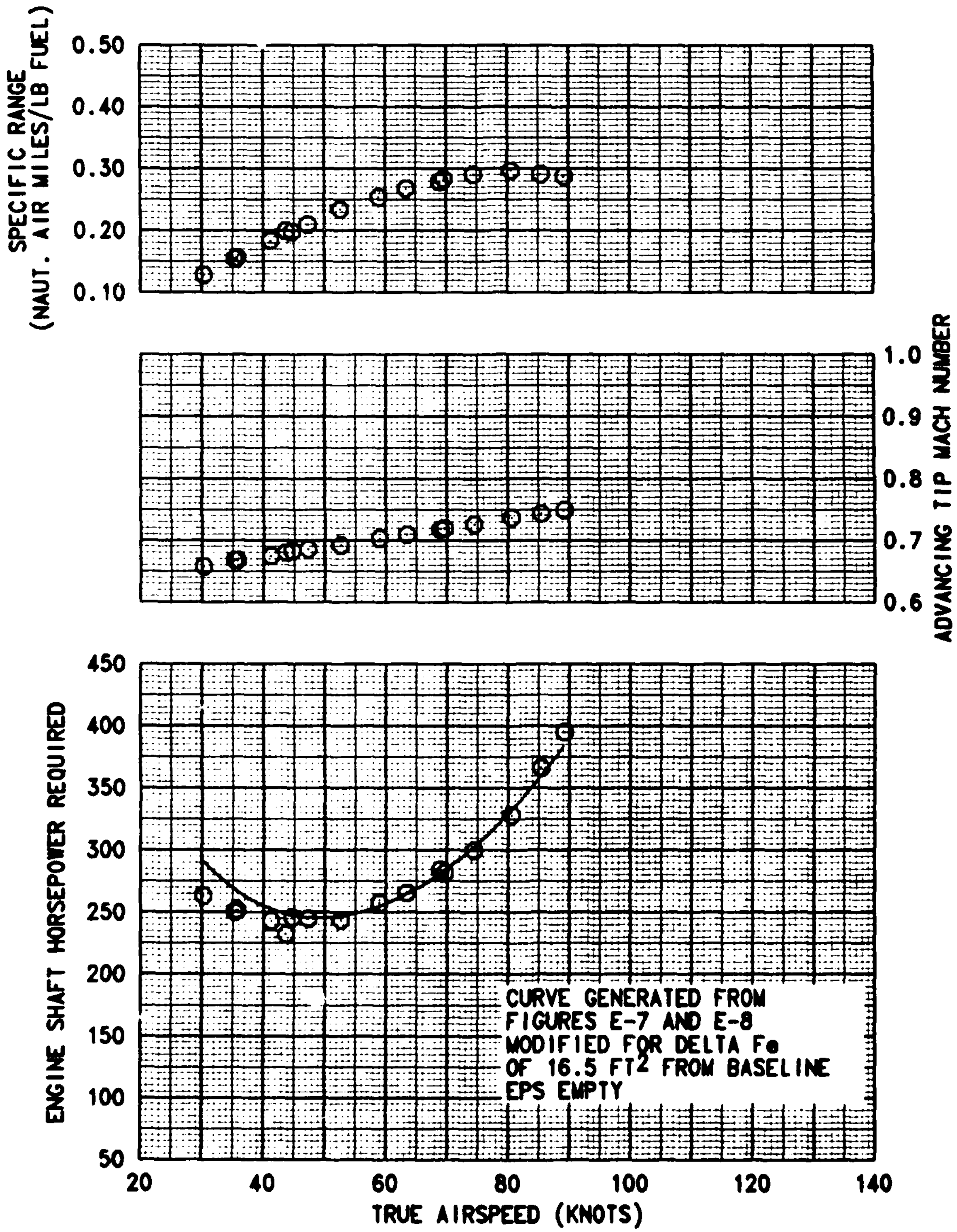


FIGURE E-22

LEVEL FLIGHT PERFORMANCE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3580	100.3(MID)	6140	2.0	477	0.006601	EPS FULL

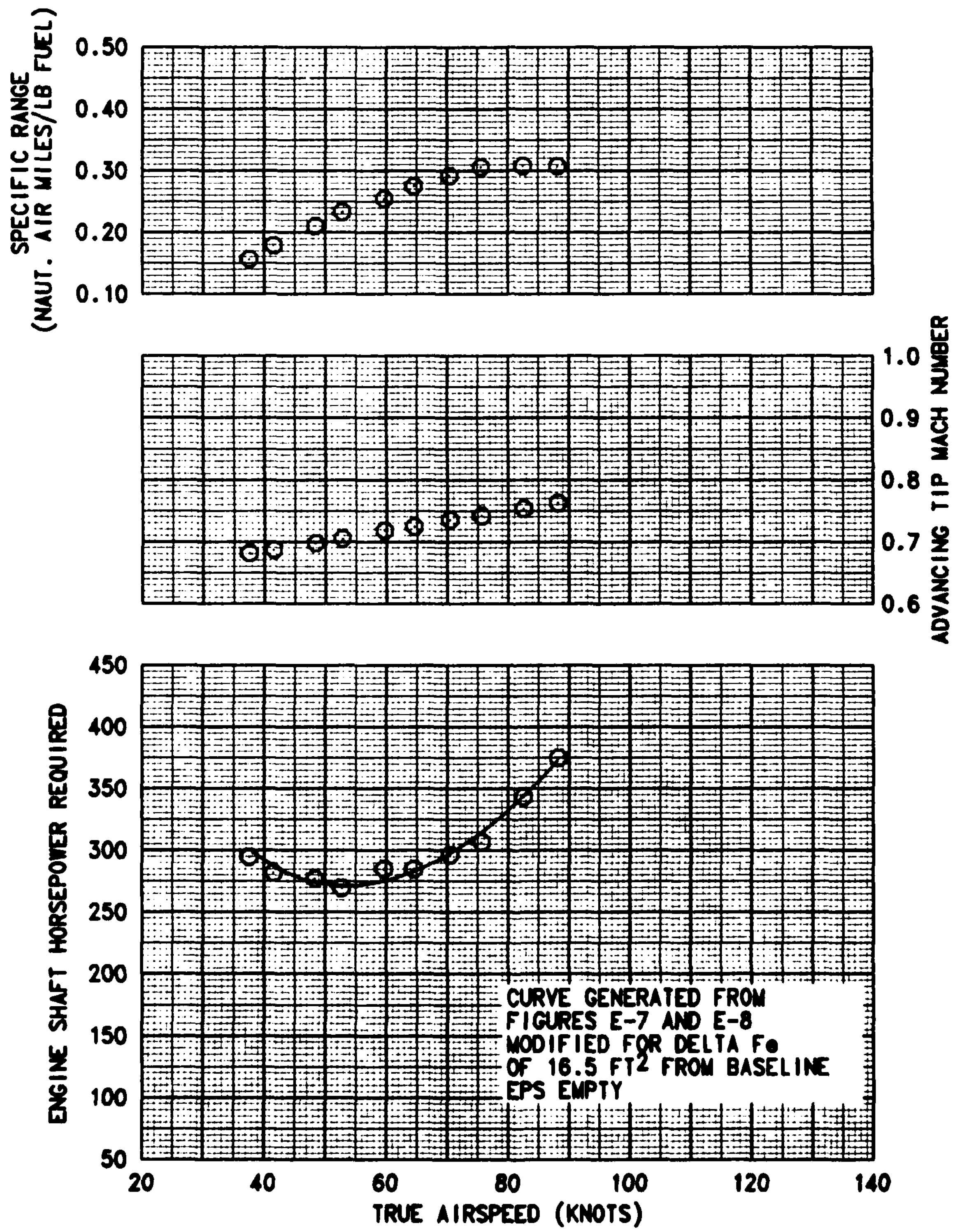


FIGURE E-23
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3850	100.3(MID)	3660	9.0	477	0.006585	EPS FULL

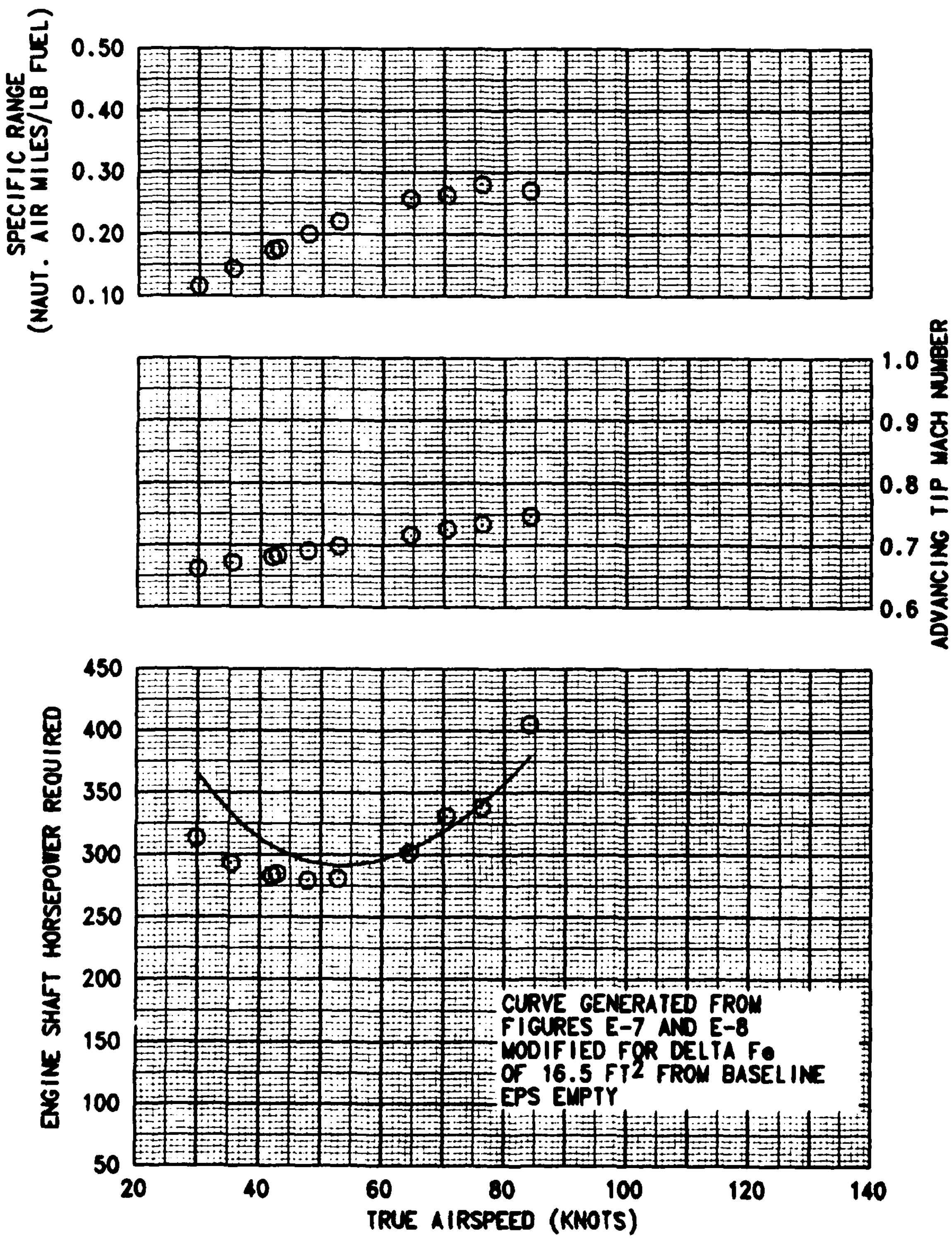


FIGURE E-24
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3480	100.8(MID)	7010	11.0	477	0.006590	NO. 2

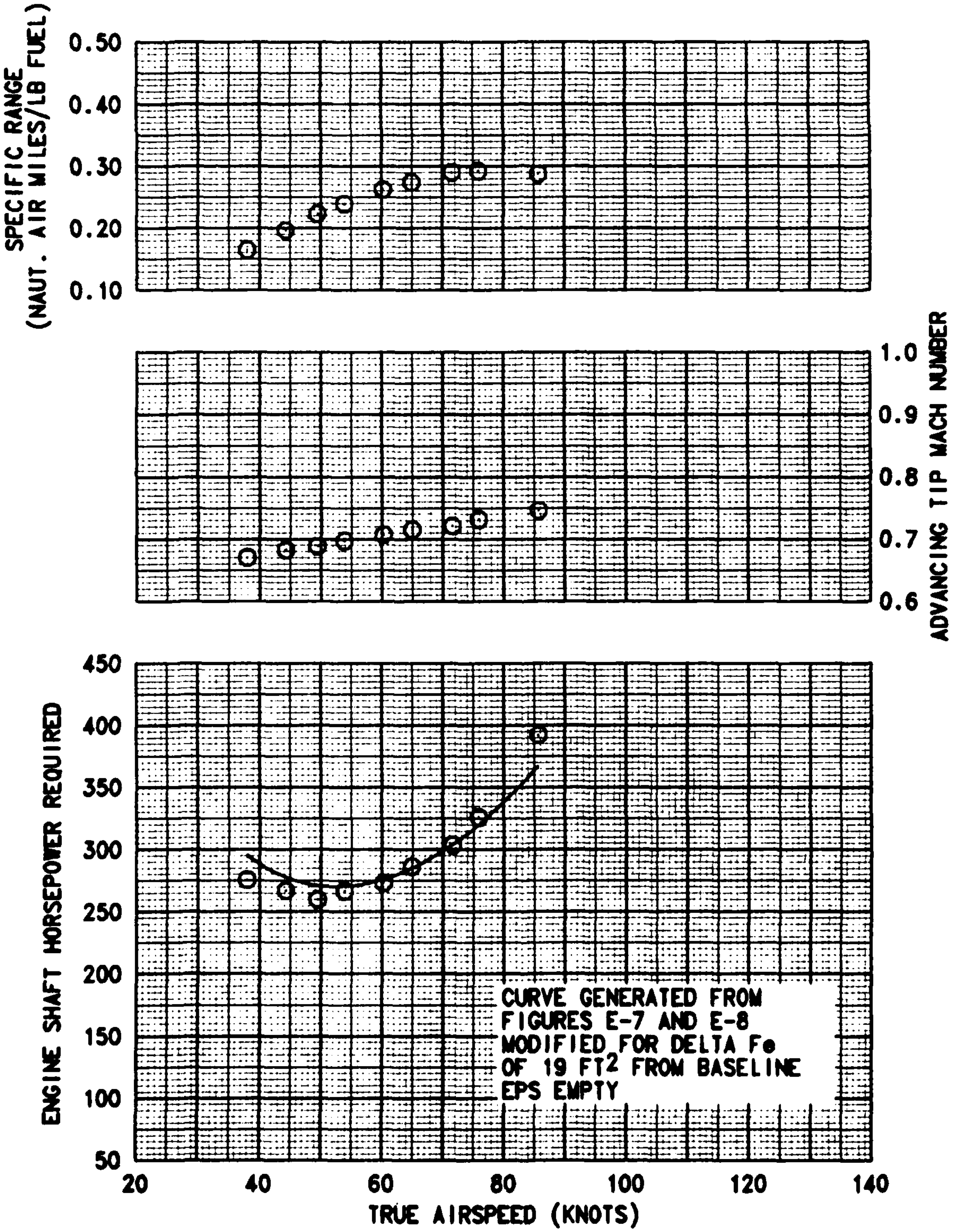


FIGURE E-25
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
2940	100.6(MID)	7180	8.0	477	0.005596	EPS EMPTY FLOATS ON

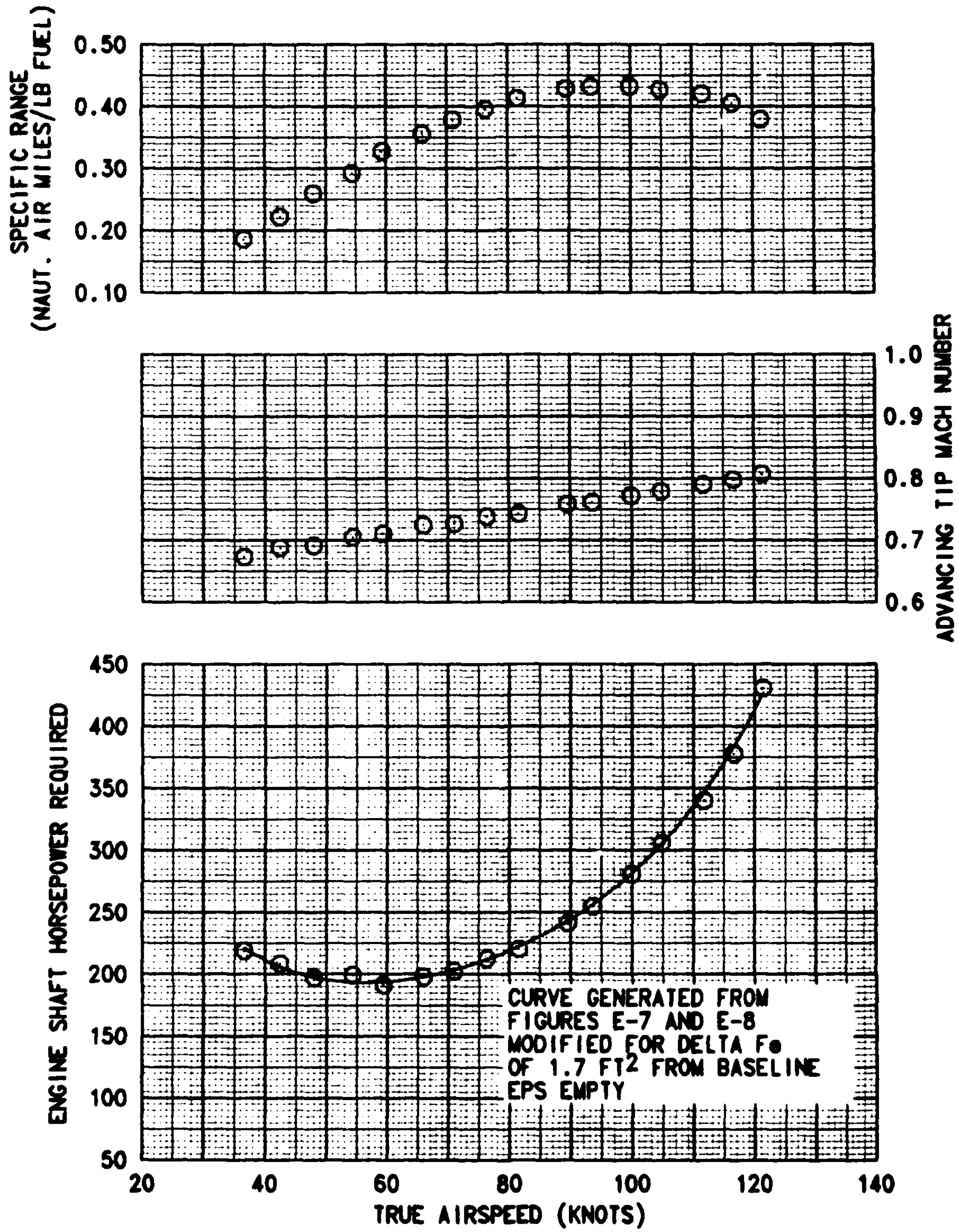


FIGURE E-26

LEVEL FLIGHT PERFORMANCE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3460	100.7(MID)	1710	11.0	477	0.005585	UNIV. MOUNT WITH 2 HMP

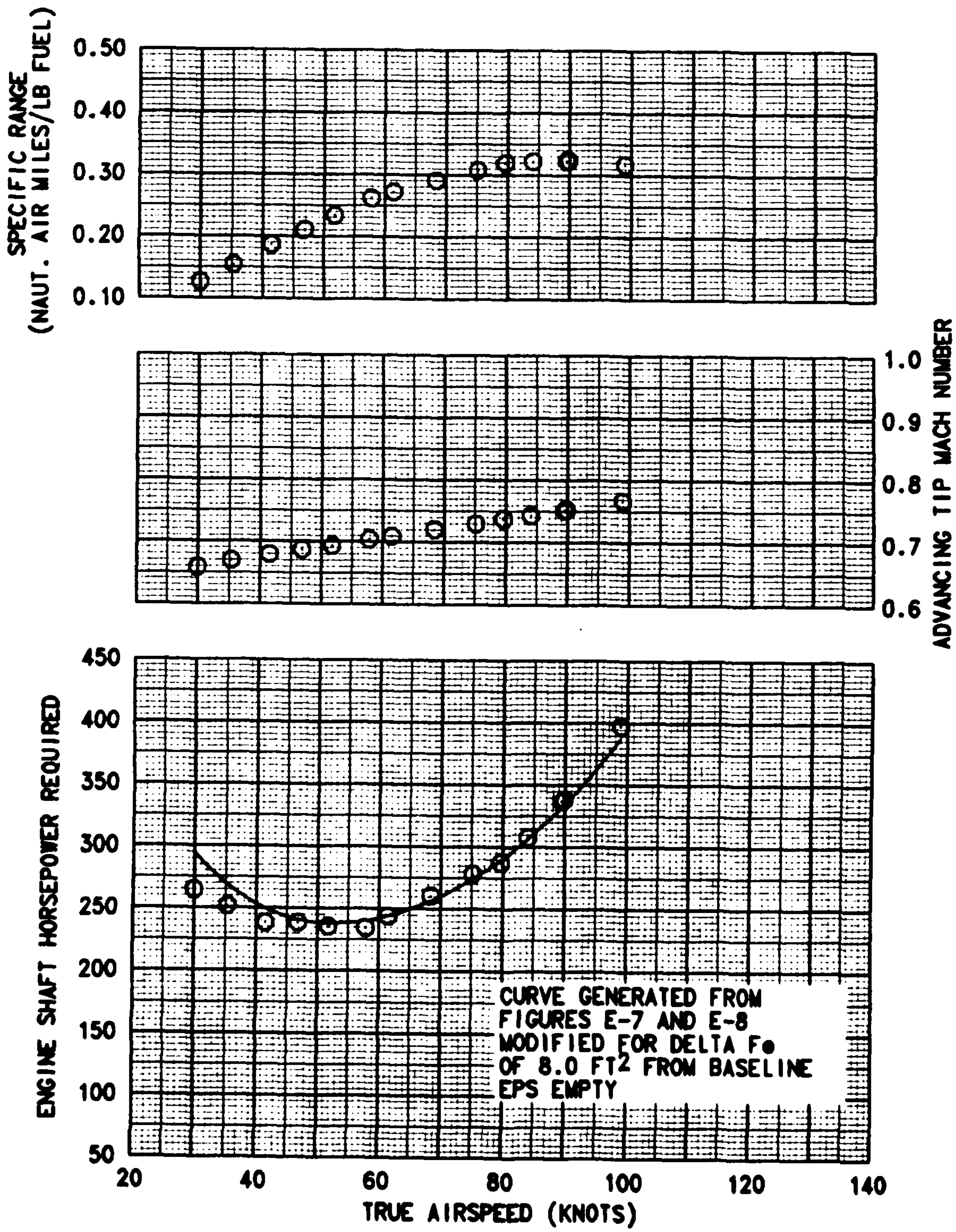


FIGURE E-27
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3370	100.7(MID)	8100	11.0	477	0.006600	UNIV. MOUNT WITH 2 HMP

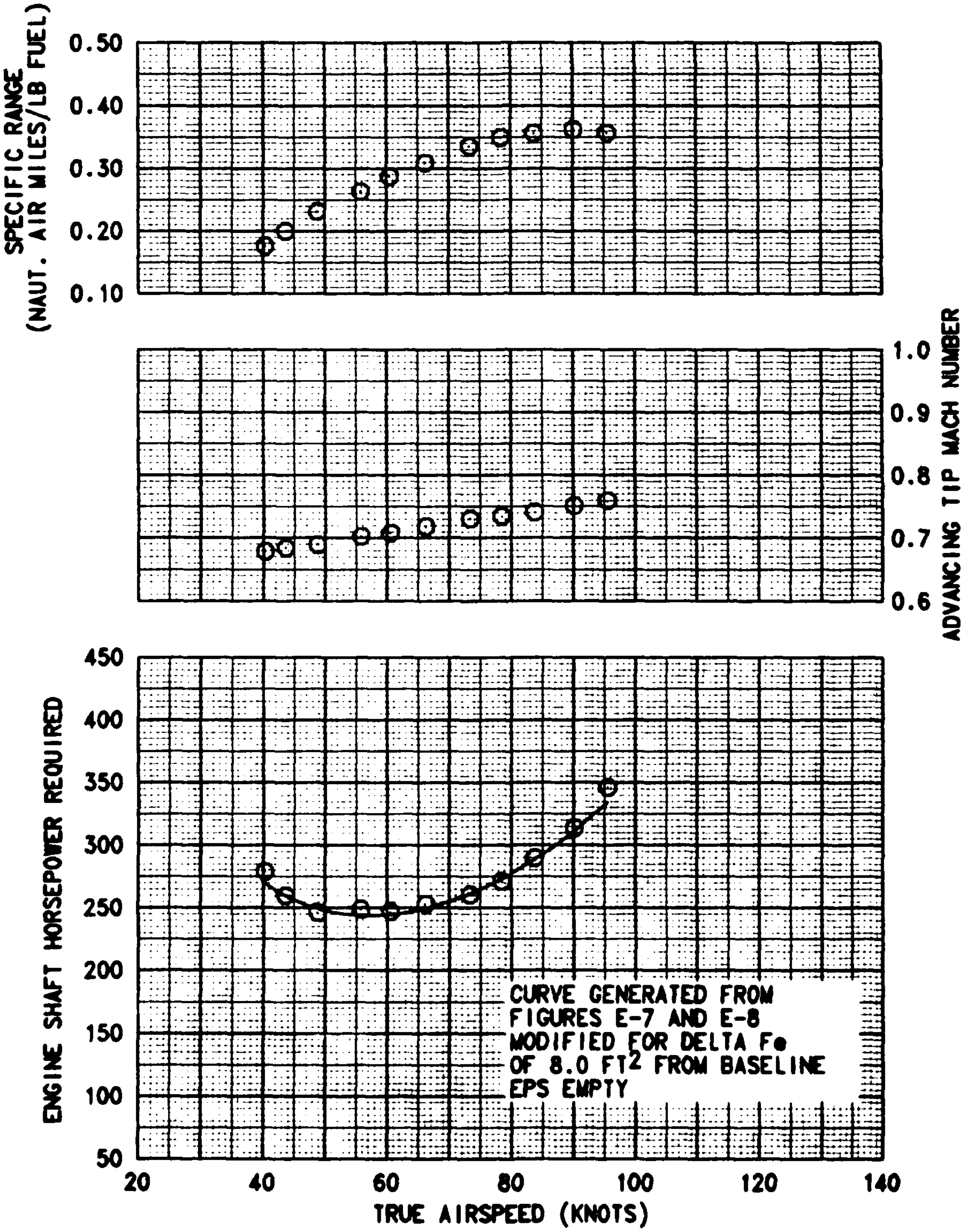


FIGURE E-28

LEVEL FLIGHT PERFORMANCE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3320	100.3(MID)	8570	3.5	477	0.006598	40mm AND UNIV. MOUNT WITH 7-SHOT LAUNCHER

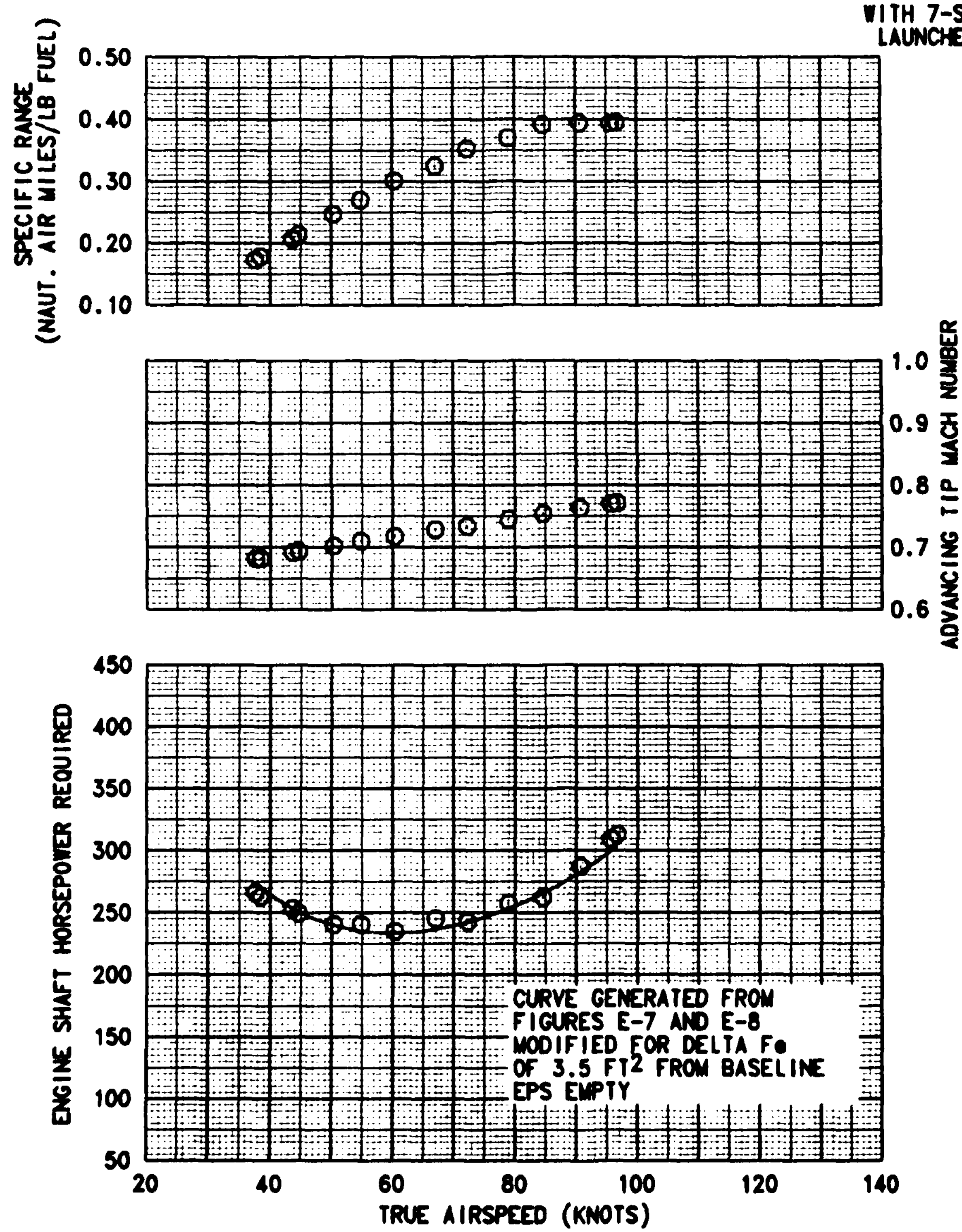


FIGURE E-29
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3420	100.6(MID)	7620	7.0	477	0.006599	UNIV. MOUNT WITH 2 19-SHOT LAUNCHERS

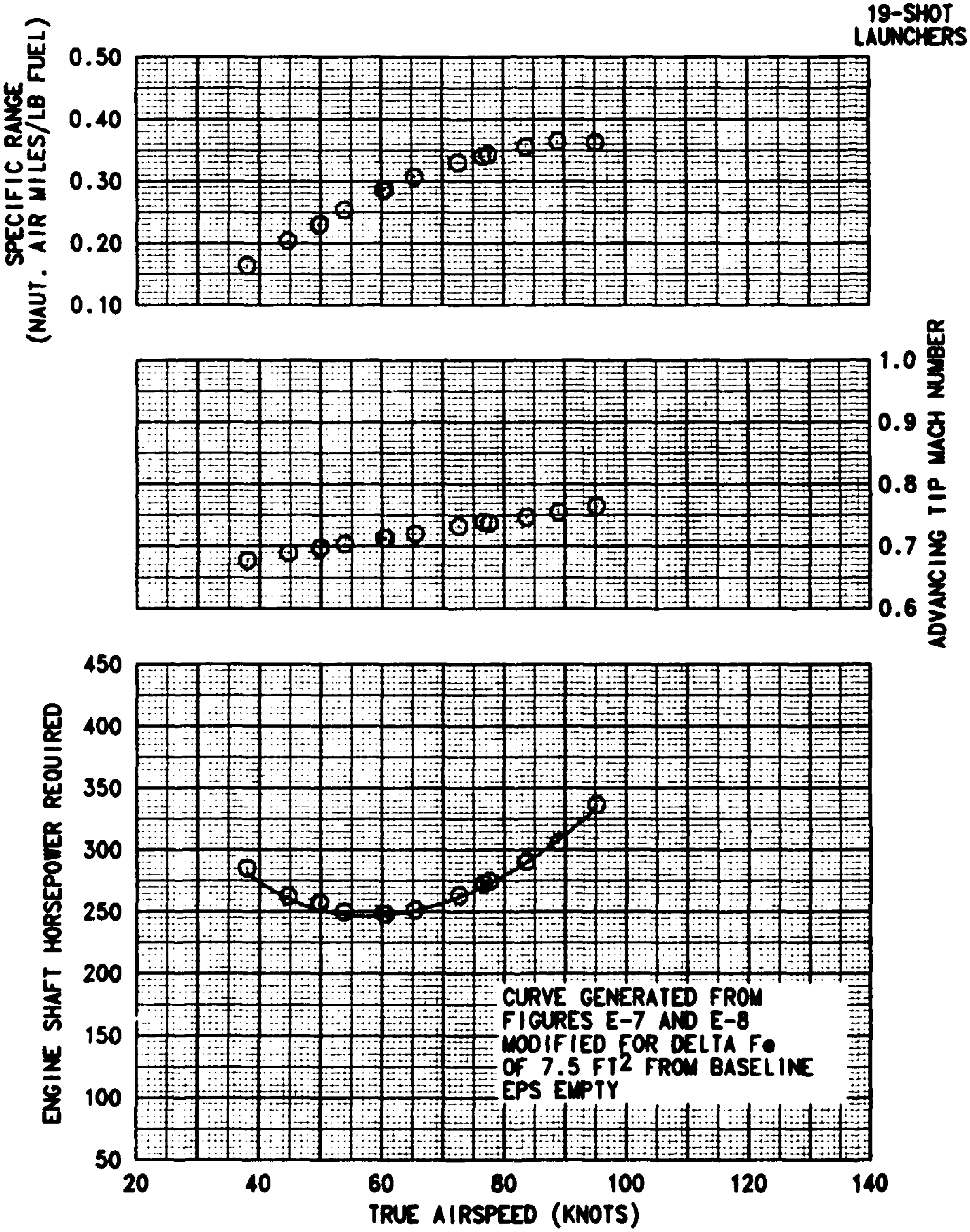


FIGURE E-30
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3360	100.7(MID)	8200	9.0	477	0.006600	UNIV. MOUNT WITH HMP AND 7-SHOT LAUNCHER

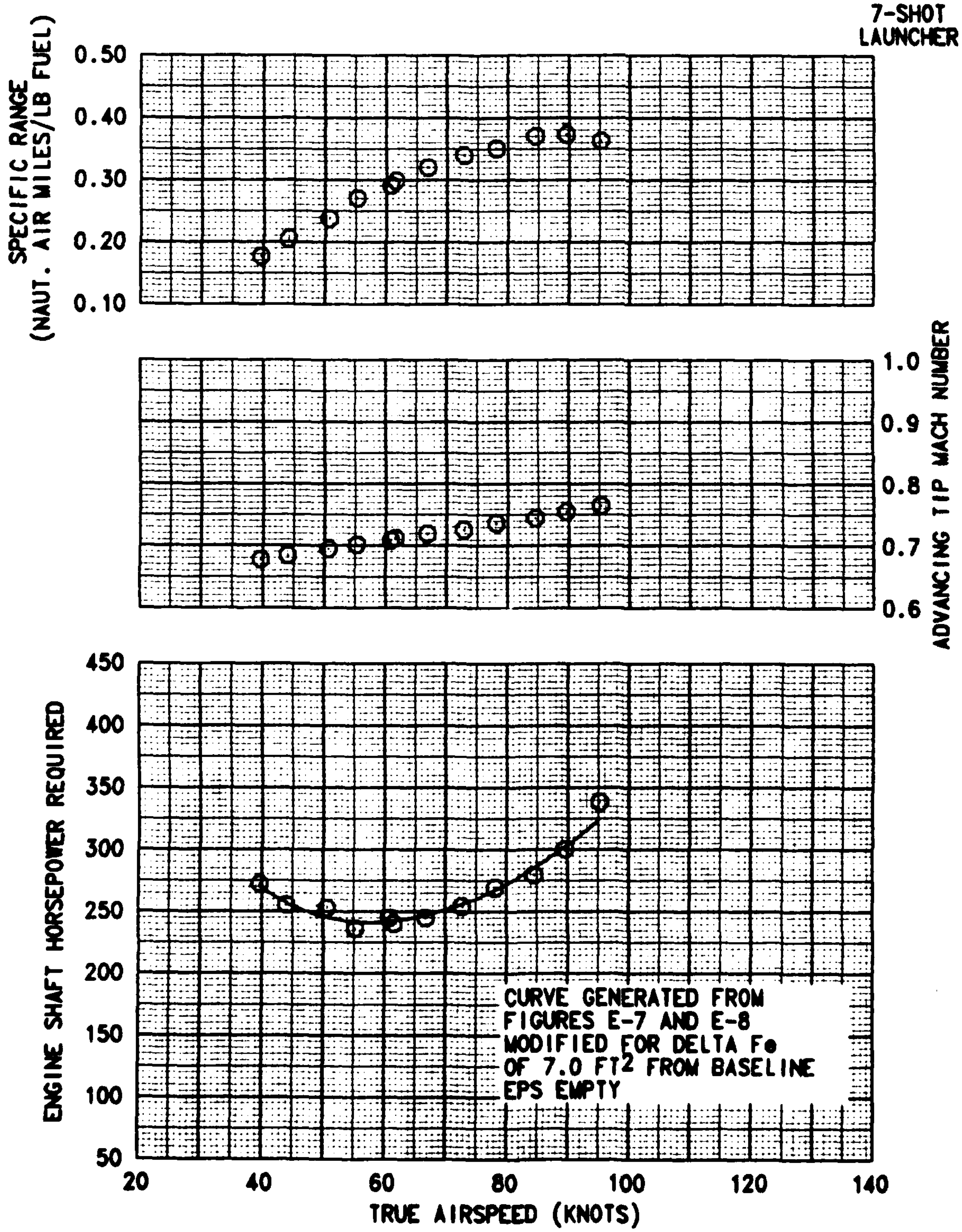


FIGURE E-31
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3400	100.8(MID)	7830	10.5	477	0.006603	UNIV. MOUNT WITH HMP AND 19-SHOT LAUNCHER

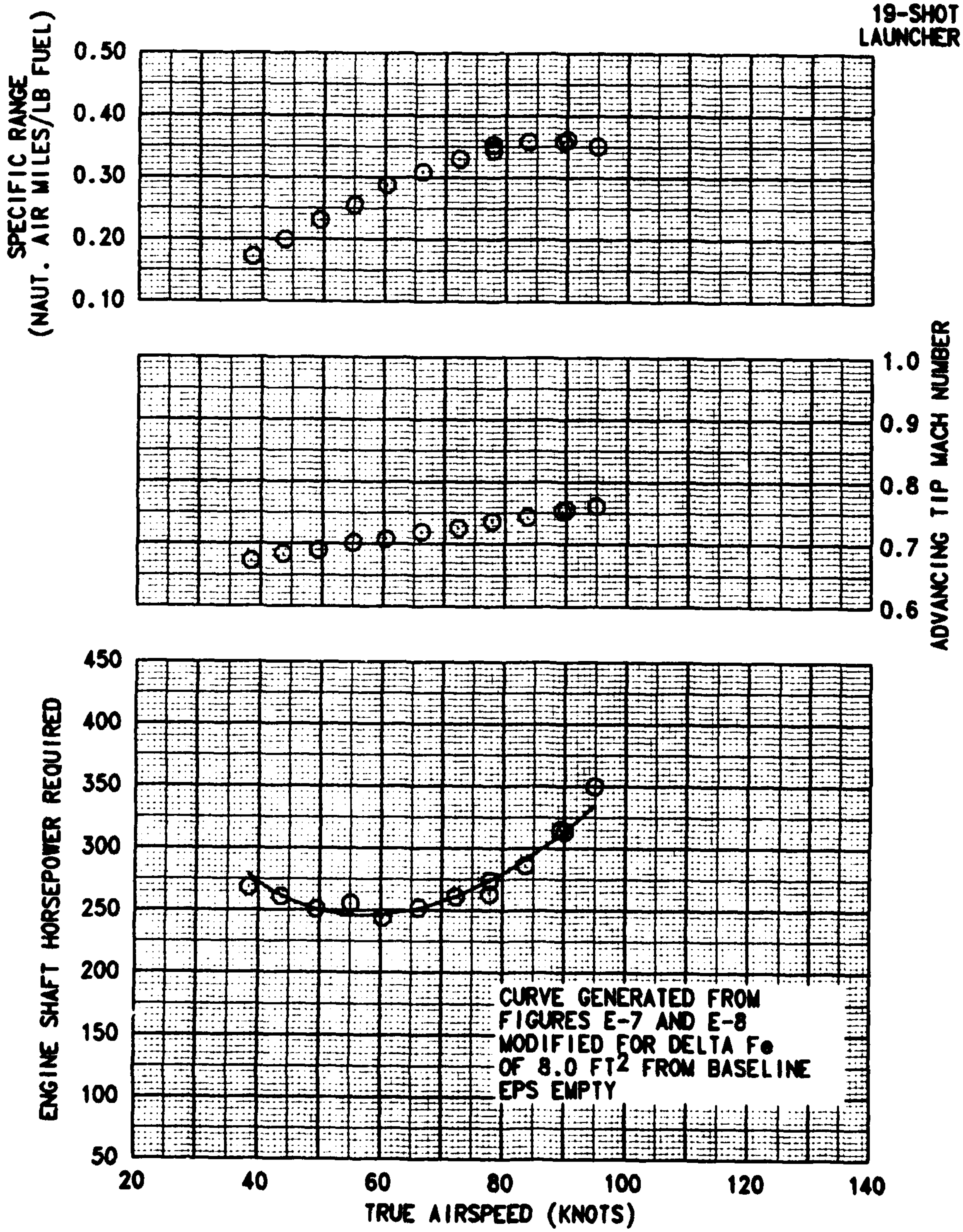


FIGURE E-32
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3390	100.6(MID)	7890	12.0	477	0.006597	40mm AND UNIV. MOUNT WITH HMP

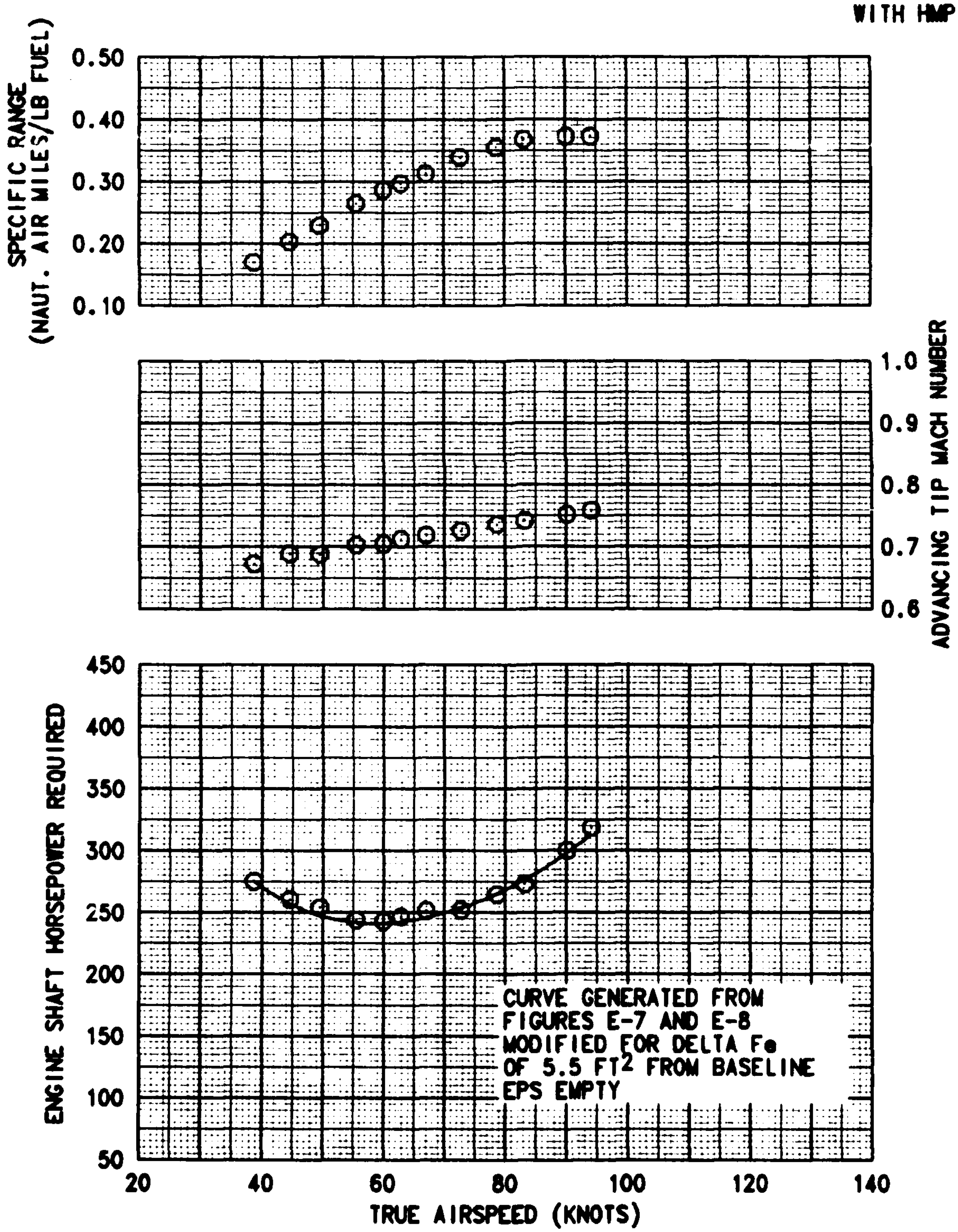


FIGURE E-33

LEVEL FLIGHT PERFORMANCE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3380	100.6(MID)	8010	0.0	477	0.006602	40mm AND UNIV. MOUNT WITH 19-SHOT LAUNCHER

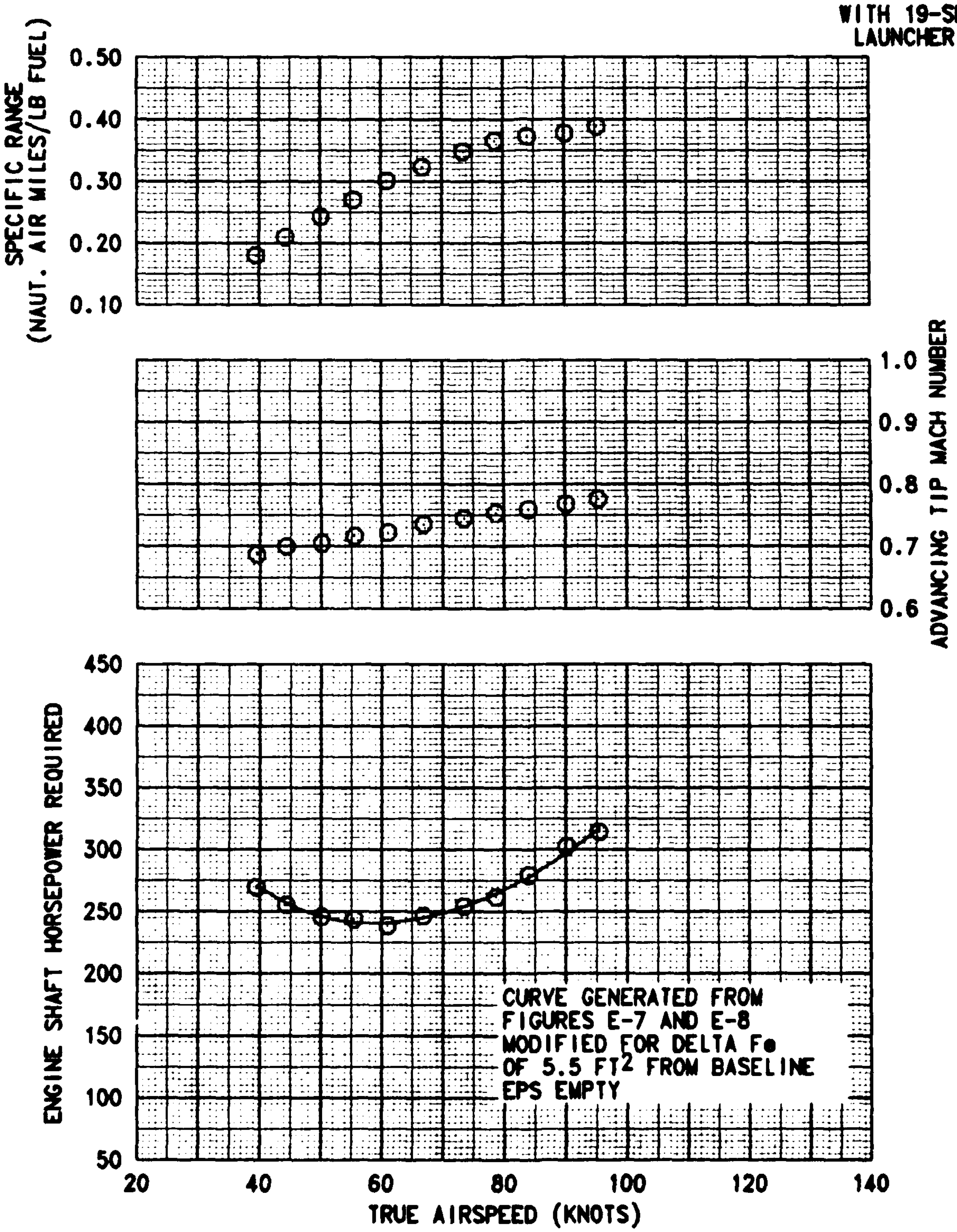


FIGURE E-34

LEVEL FLIGHT PERFORMANCE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3400	100.6(MID)	7820	1.0	477	0.006[illegible]	MINIGUN AND UNIV. MOUNT WITH HMP

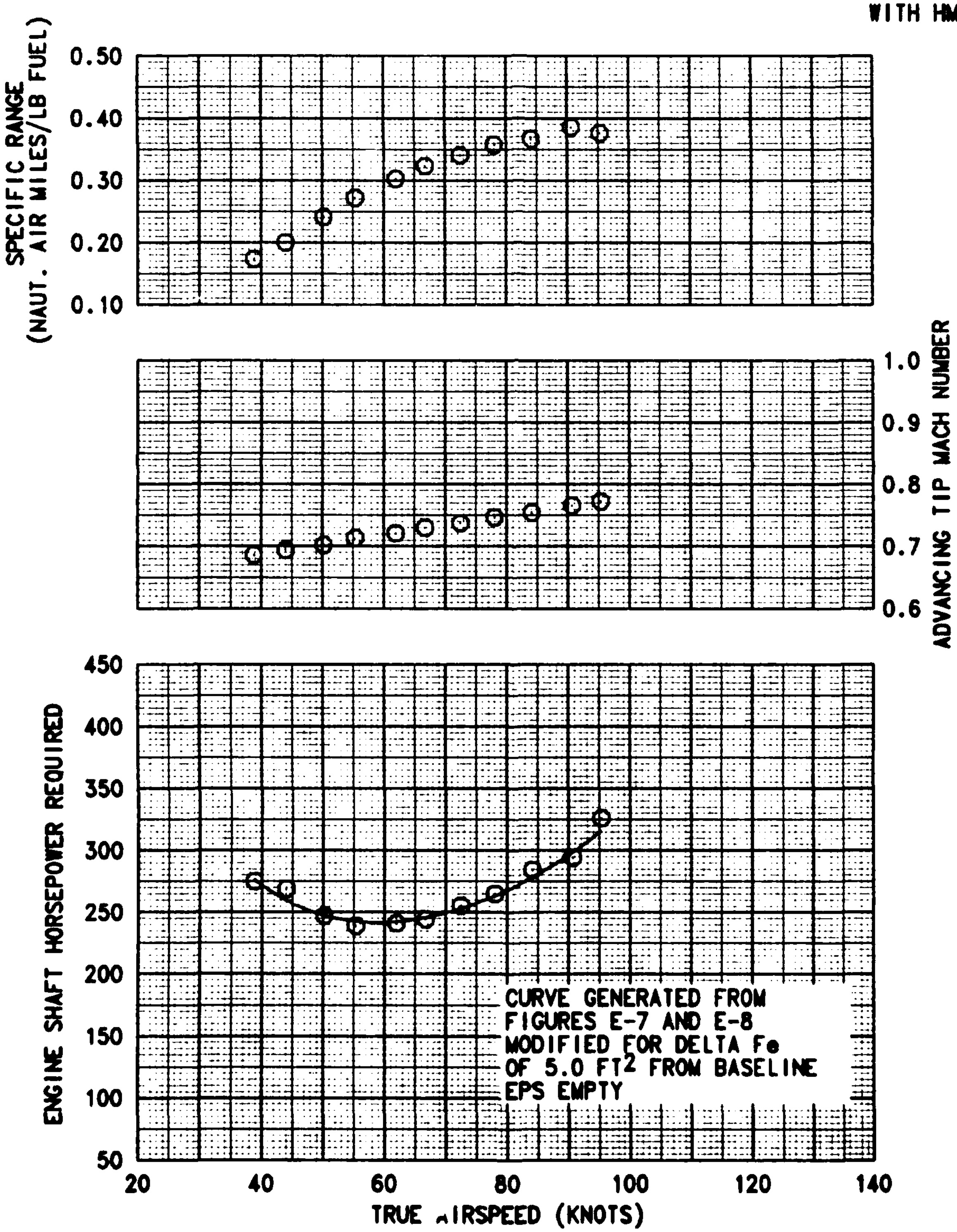


FIGURE E-35
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3540	100.8(MID)	6500	12.5	477	0.006599	UNIV. MOUNT WITH 2 FULL 7-SHOT LAUNCHERS

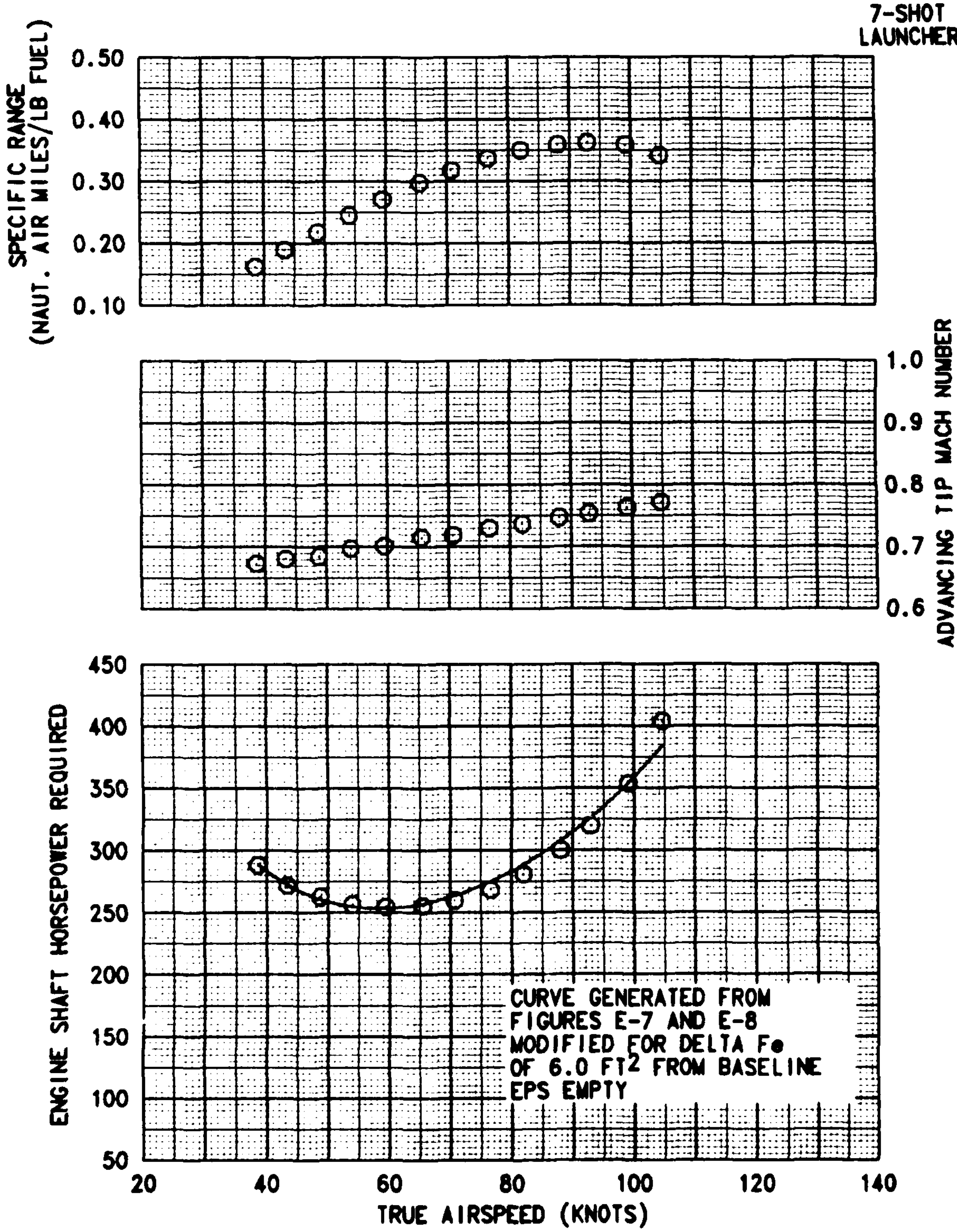


FIGURE E-36
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3380	100.5(MID)	8000	6.5	477	0.006599	UNIV. MOUNT WITH 2 EMPTY 7-SHOT LAUNCHERS

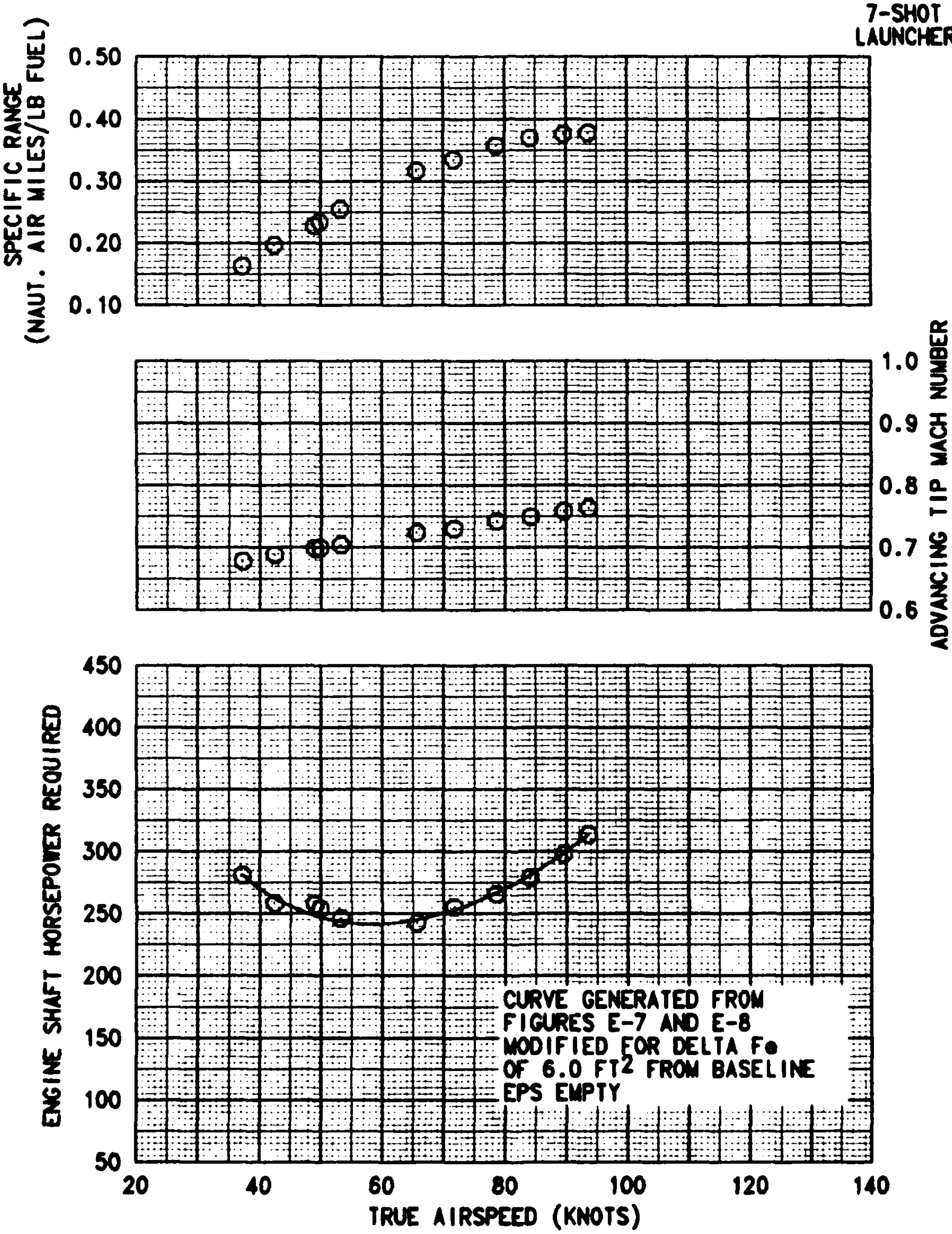


FIGURE E-37
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3500	100.8(MID)	6870	18.0	477	0.006600	EMPTY PLANK

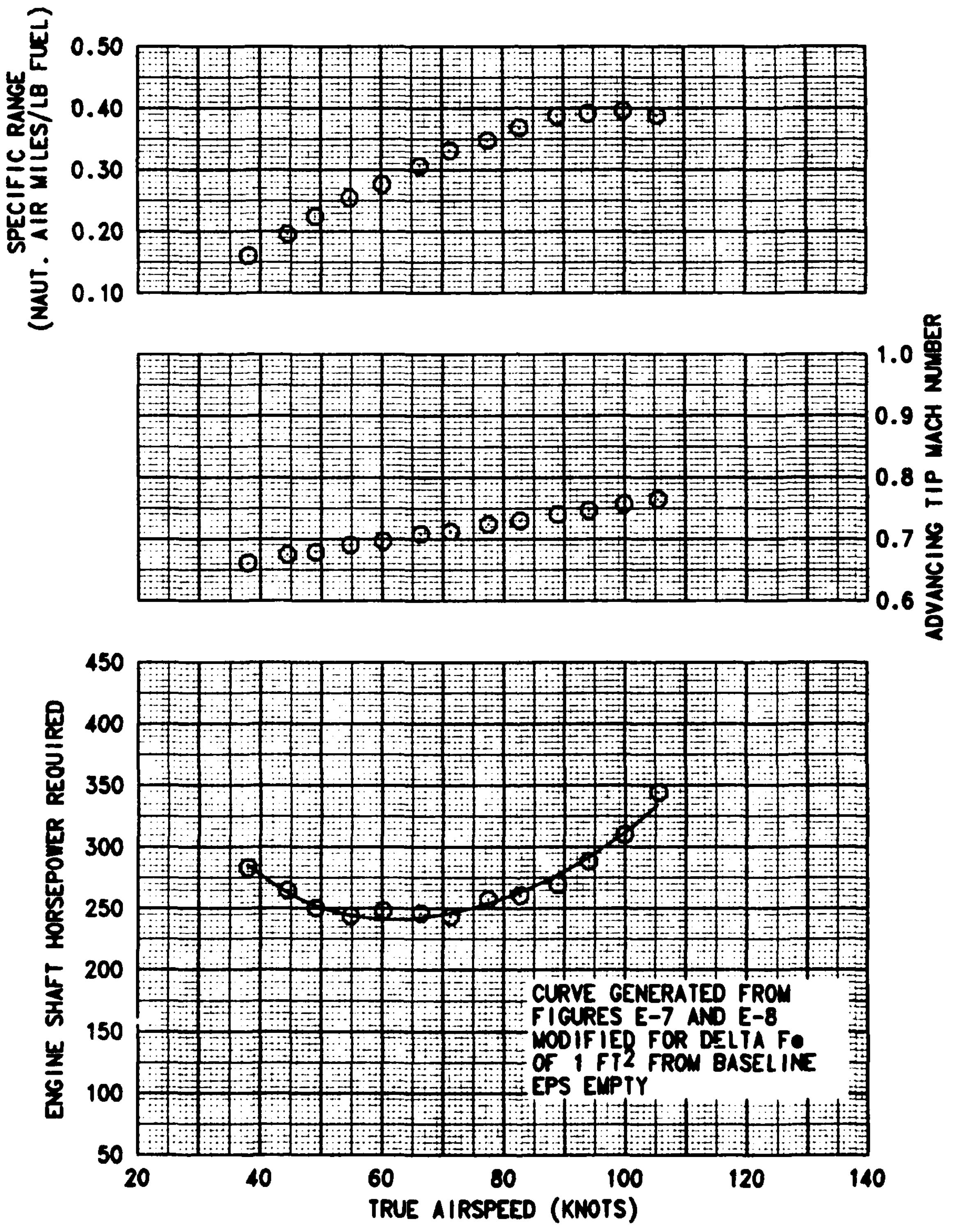


FIGURE E-38
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG CAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3400	100.6(MID)	7790	24.0	477	0.006595	PLANK WITH 2 19-SHOT

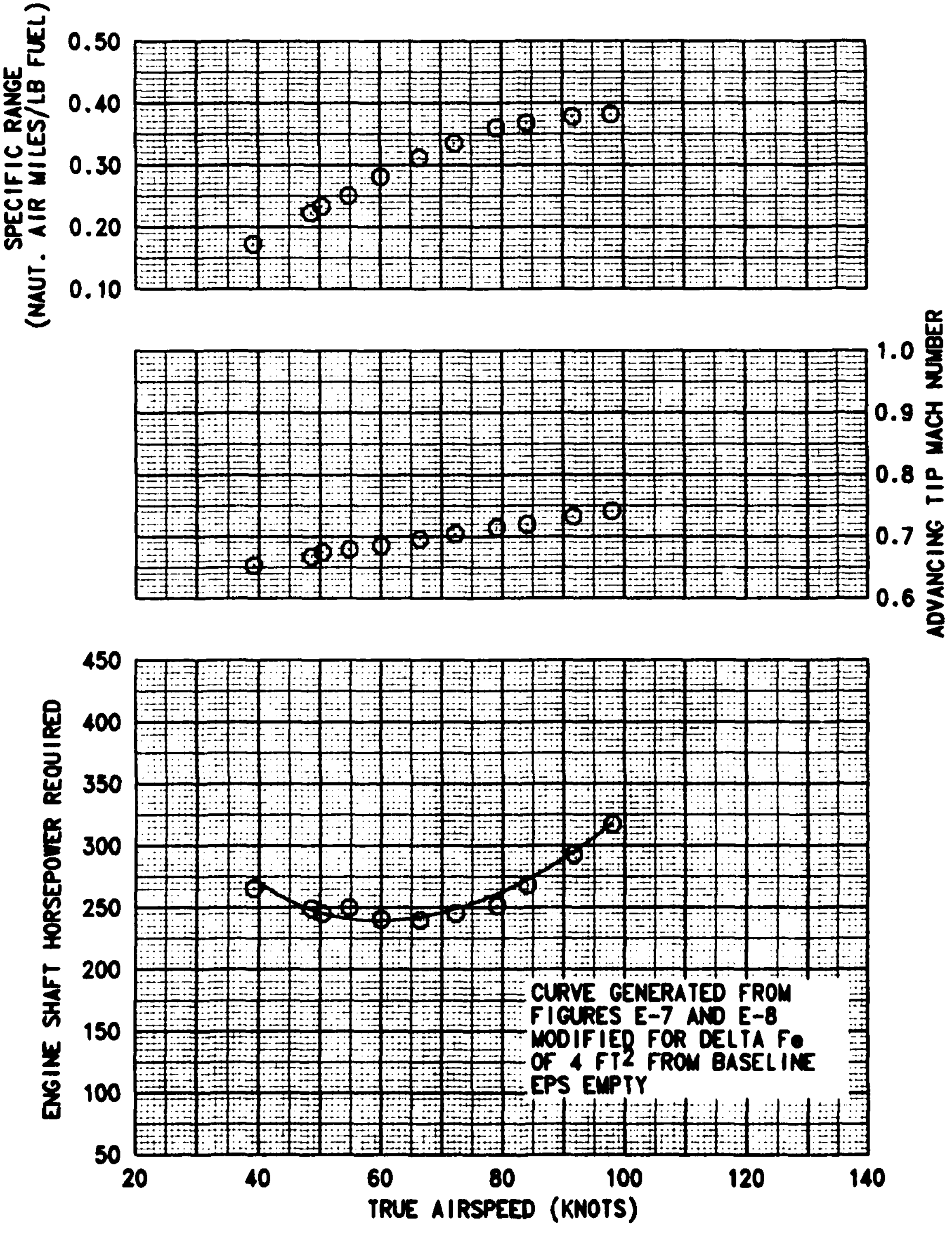


FIGURE E-39
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3440	100.7(MID)	7440	20.0	477	0.006601	PLANK WITH 50 CAL & 7-SHOT

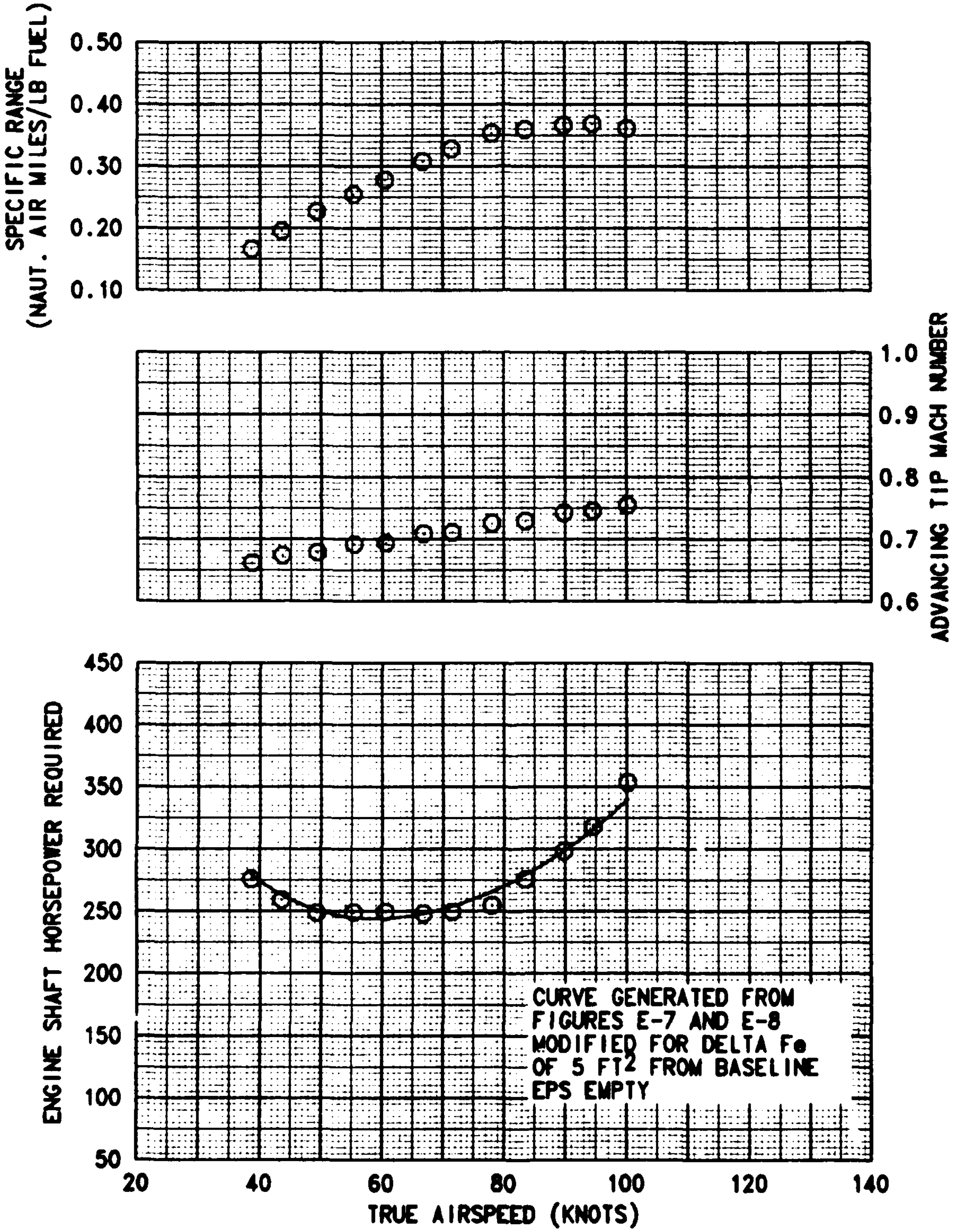


FIGURE E-40
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3440	100.6(MID)	7420	12.5	477	0.006598	PLANK WITH 2 50 CAL

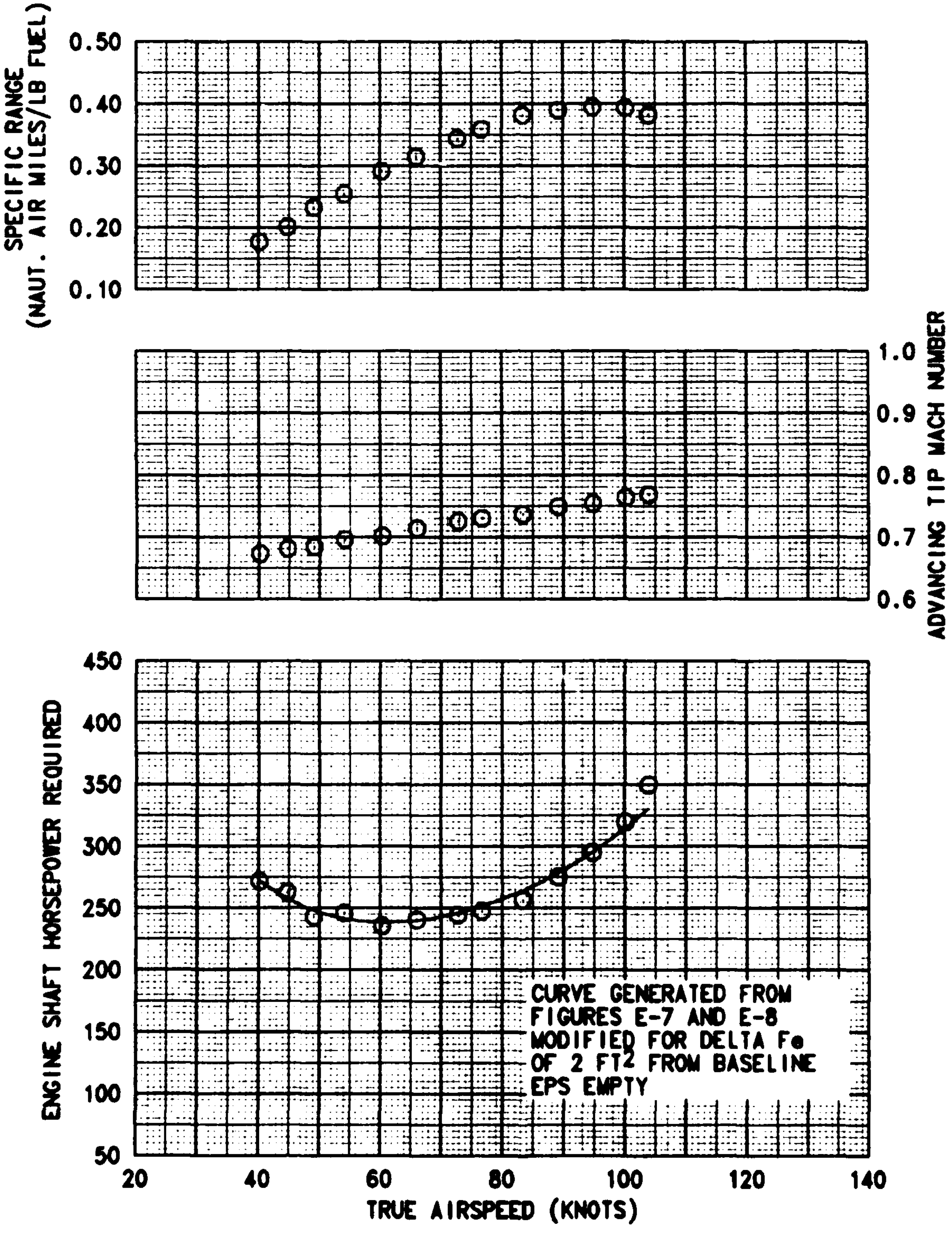


FIGURE E-41
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3380	100.7(MID)	7990	16.5	477	0.006598	LOW RIDER WITH 3 TROOPS BOTH SIDES

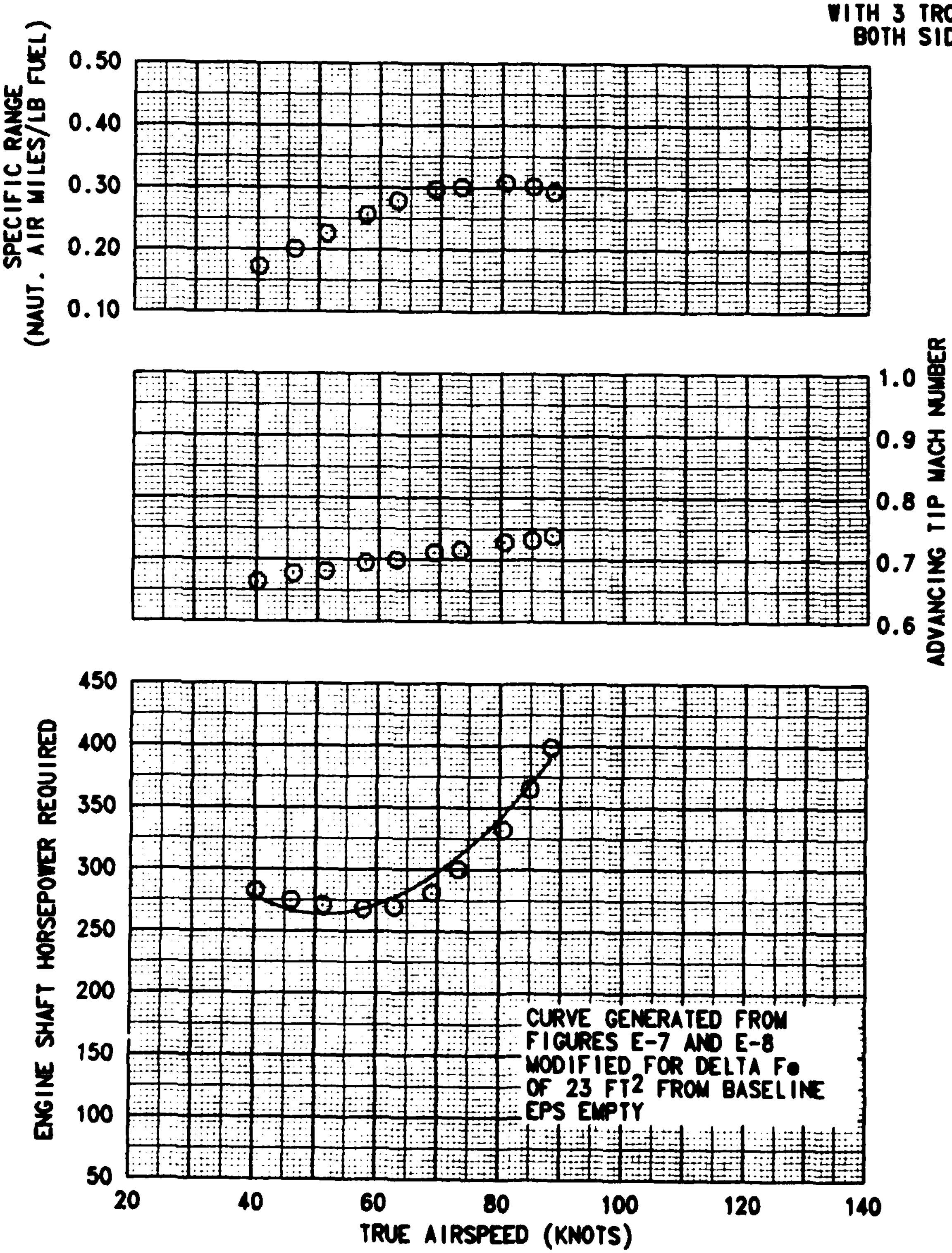


FIGURE E-42
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3790	101.3(MID)	8860	14.5	477	0.007599	LOW RIDER WITH 3 TROOPS BOTH SIDES

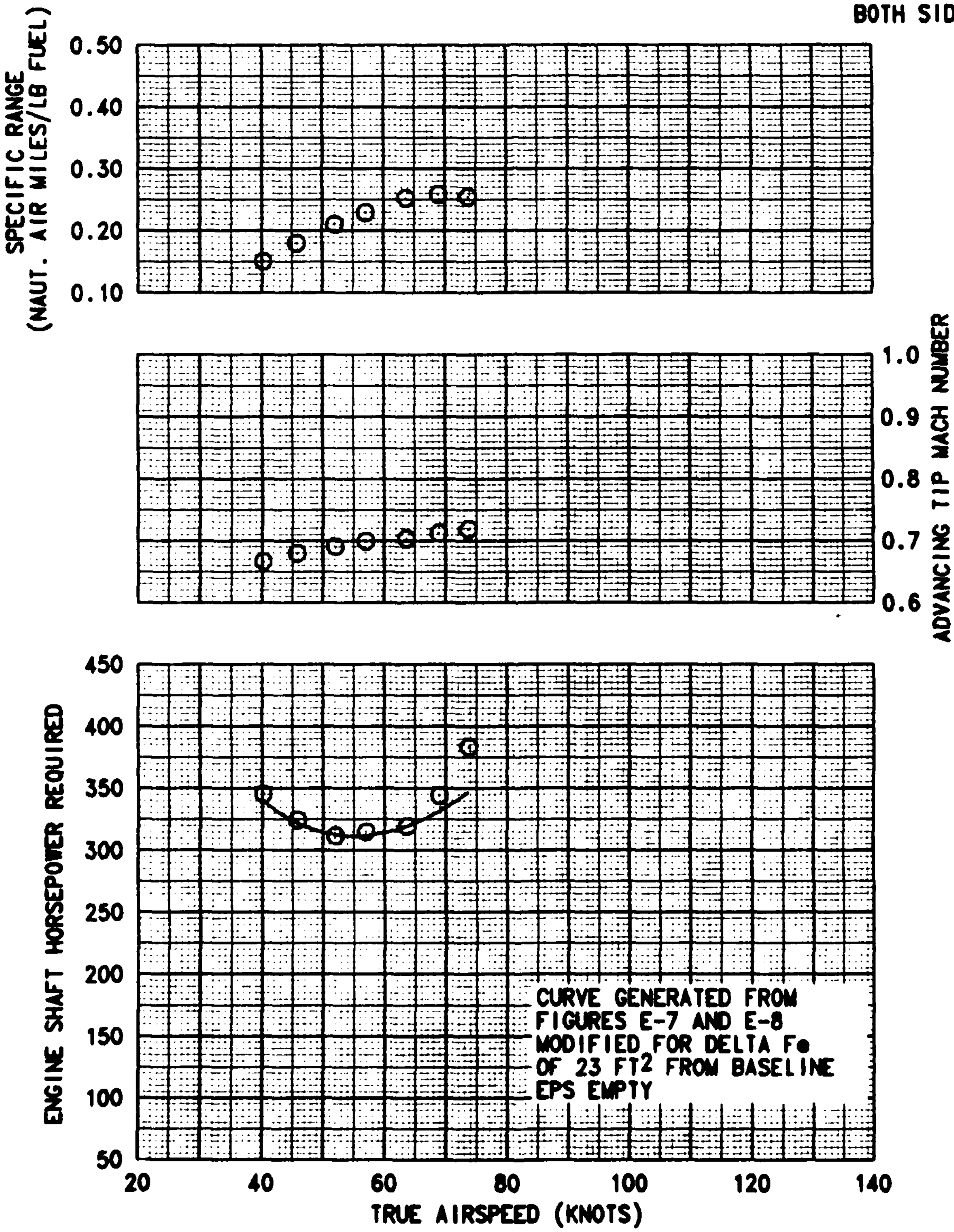


FIGURE E-43
LEVEL FLIGHT PERFORMANCE
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION LONG (FS)	AVG LONG CG LOCATION LAT (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG THRUST COEFF.	CONFIGURATION
3180	102.0(MID)	3.1 RT	4600	21.0	477	0.005596	LOW RIDER EMPTY ON LEFT, WITH 3 TROOPS ON RIGHT

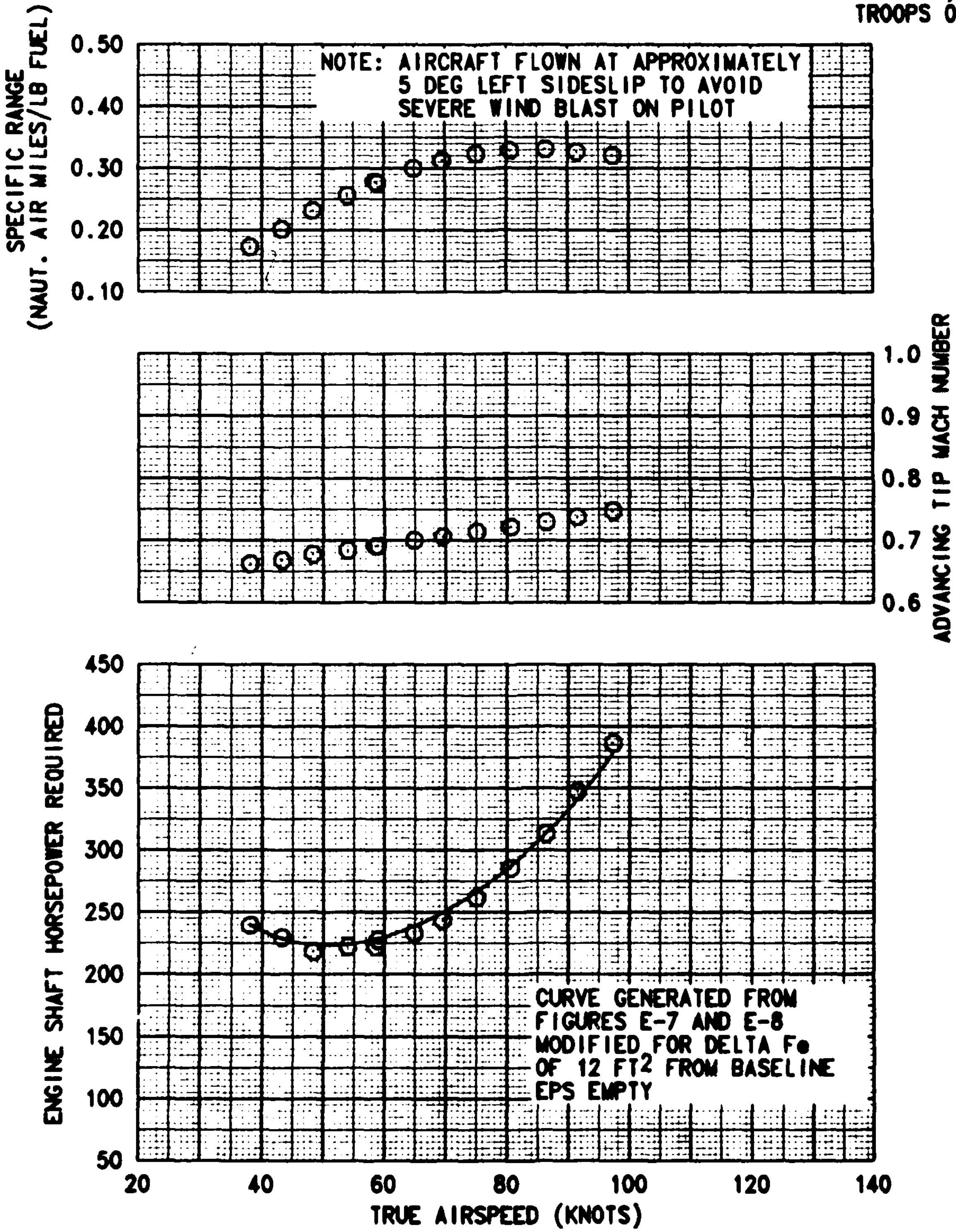


FIGURE E-44
AUTOROTATIONAL DESCENT PERFORMANCE
AH-6G USA S/N 319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)
2930	100.8(MID)	5880	4.0	410

51

NOTES: 1. EPS EMPTY CONFIGURATION
2. ZERO SIDESLIP TRIM CONDITION

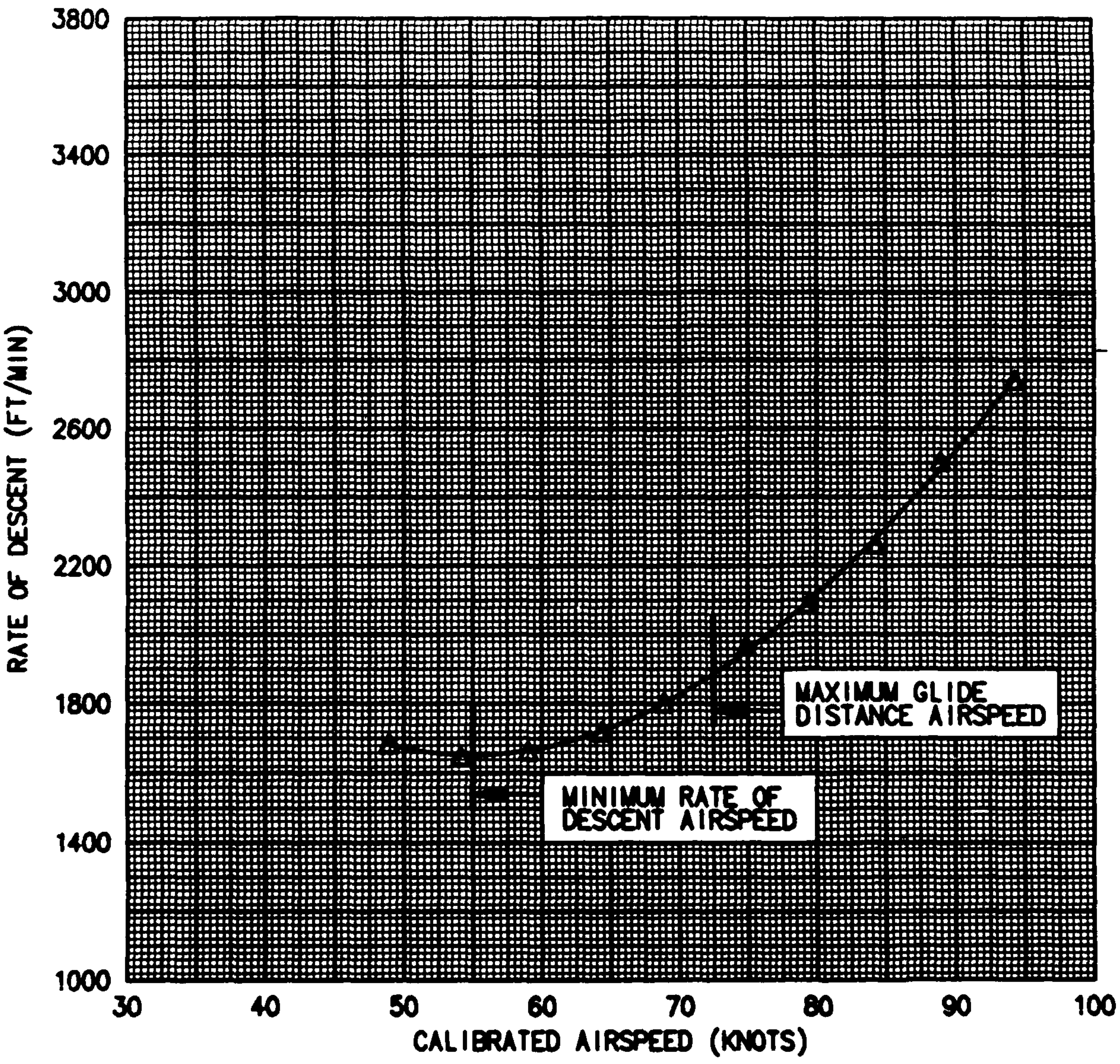


FIGURE E-45
AUTOROTATIONAL DESCENT PERFORMANCE
AH-6G USA S/N 319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)
3730	100.4(MID)	5400	7.5	409

NOTES: 1. EPS FULL CONFIGURATION
2. ZERO SIDESLIP TRIM CONDITION

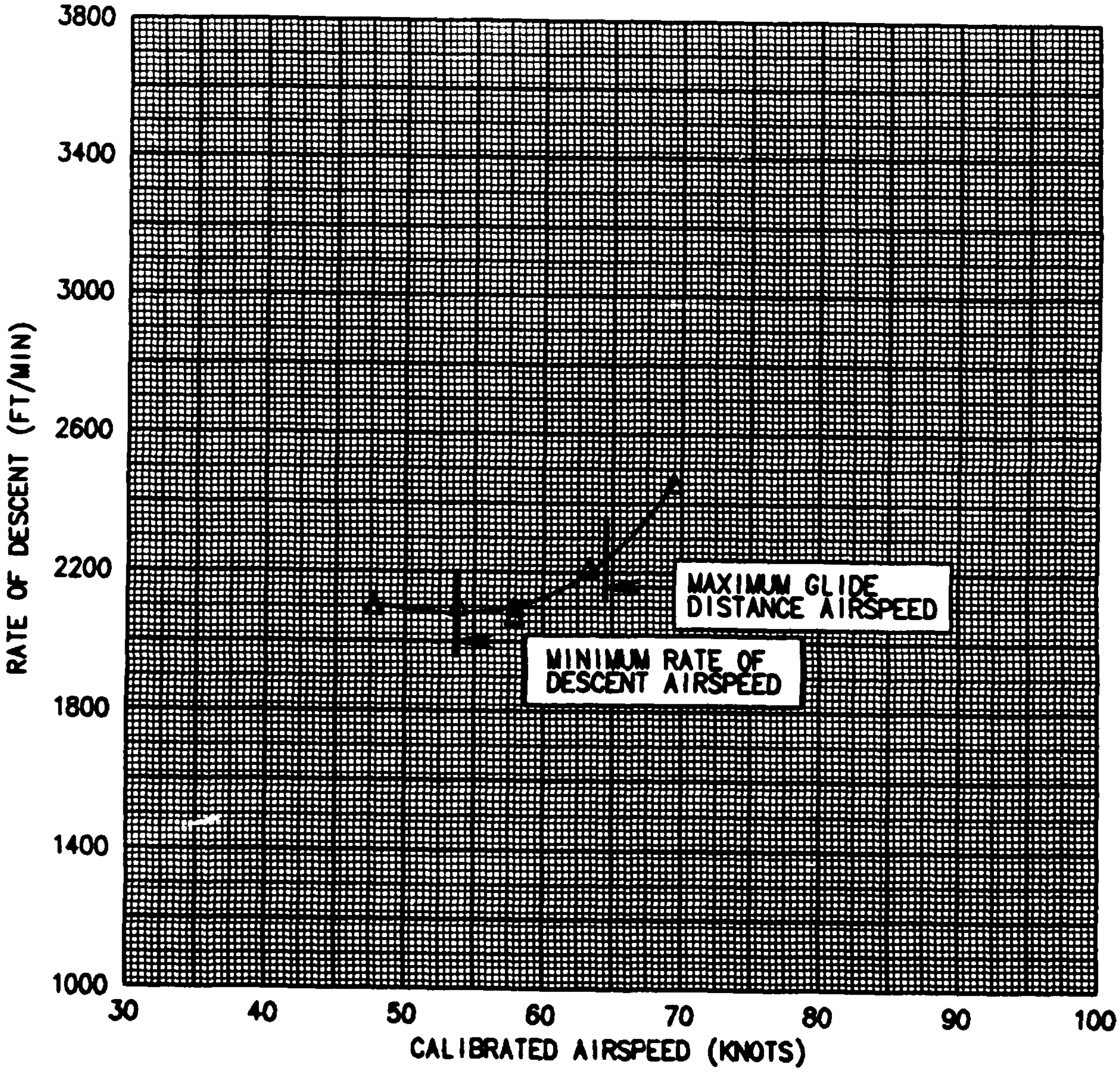


FIGURE E-46
AUTOROTATIONAL DESCENT PERFORMANCE
AH-6G USA S/N 319

	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG CALIBRATED AIRSPEED (KNOTS)
△	2930	100.8(MID)	5880	4.0	54

NOTES: 1. EPS EMPTY CONFIGURATION
2. CONSTANT AIRSPEED
3. ZERO SIDESLIP TRIM CONDITION

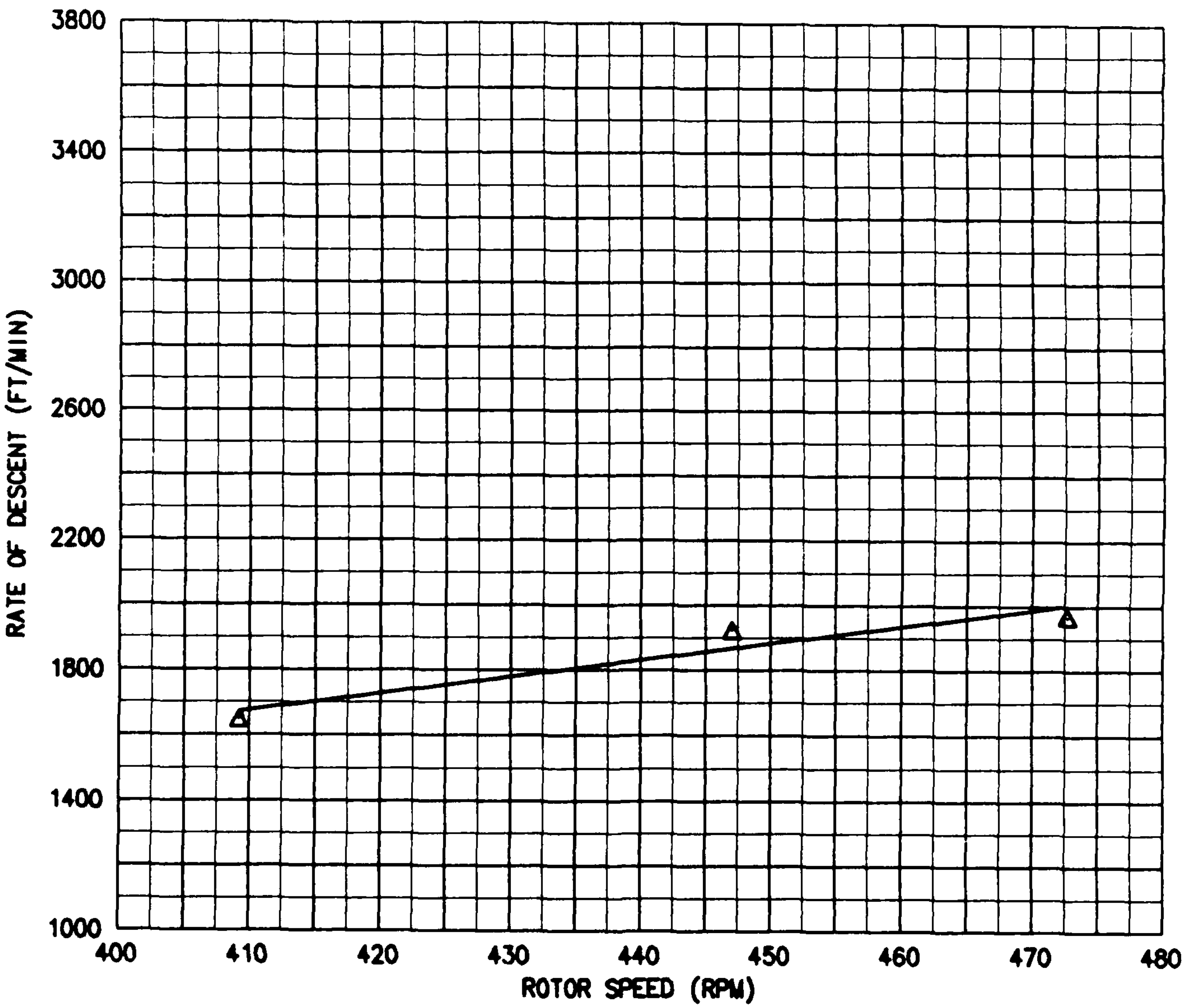


FIGURE E-47
AUTOROTATIONAL DESCENT PERFORMANCE
AH-6G USA S/N 319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG CALIBRATED AIRSPEED (KNOTS)
3730	100.4(MID)	5400	7.5	58

NOTES: 1. EPS FULL CONFIGURATION
2. CONSTANT AIRSPEED
3. ZERO SIDESLIP TRIM CONDITION

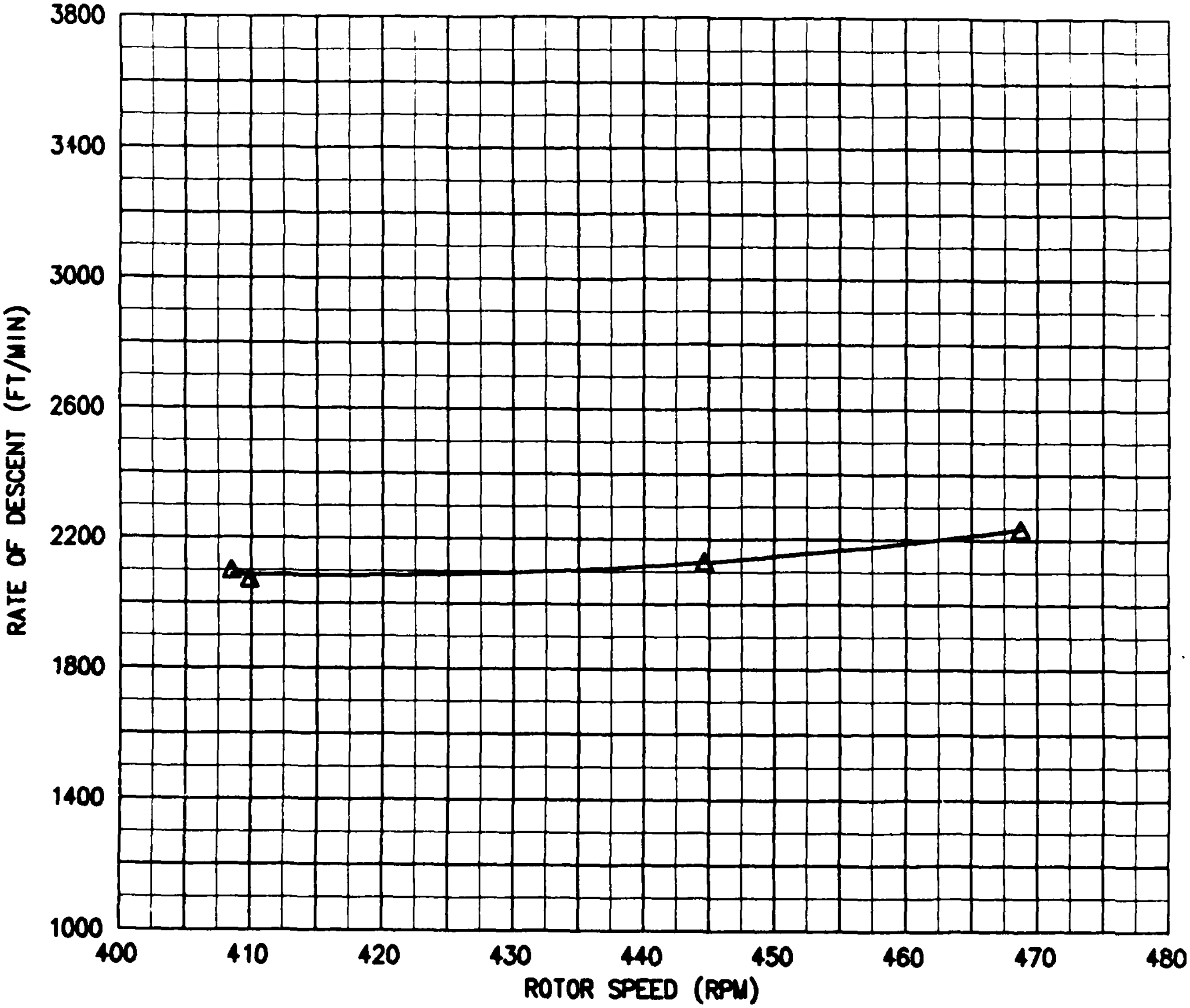


FIGURE E-48

CONTROL POSITIONS IN TRIMMED FORWARD FLIGHT

AH-6G USA S/N 84-24319

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONG CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG MAIN ROTOR SPEED (RPM)	CONFIGURATION
□	3860	101.1 (MID)	9940	3.0	477	EPS EMPTY
○	3760	101.2 (MID)	9140	5.0	477	EPS EMPTY
△	3400	101.2 (MID)	7700	7.0	477	EPS EMPTY
+	3040	100.7 (MID)	6100	11.5	477	EPS EMPTY
◇	2740	101.9 (MID)	2920	3.0	477	EPS EMPTY

NOTE: ZERO SIDESLIP TRIM CONDITION

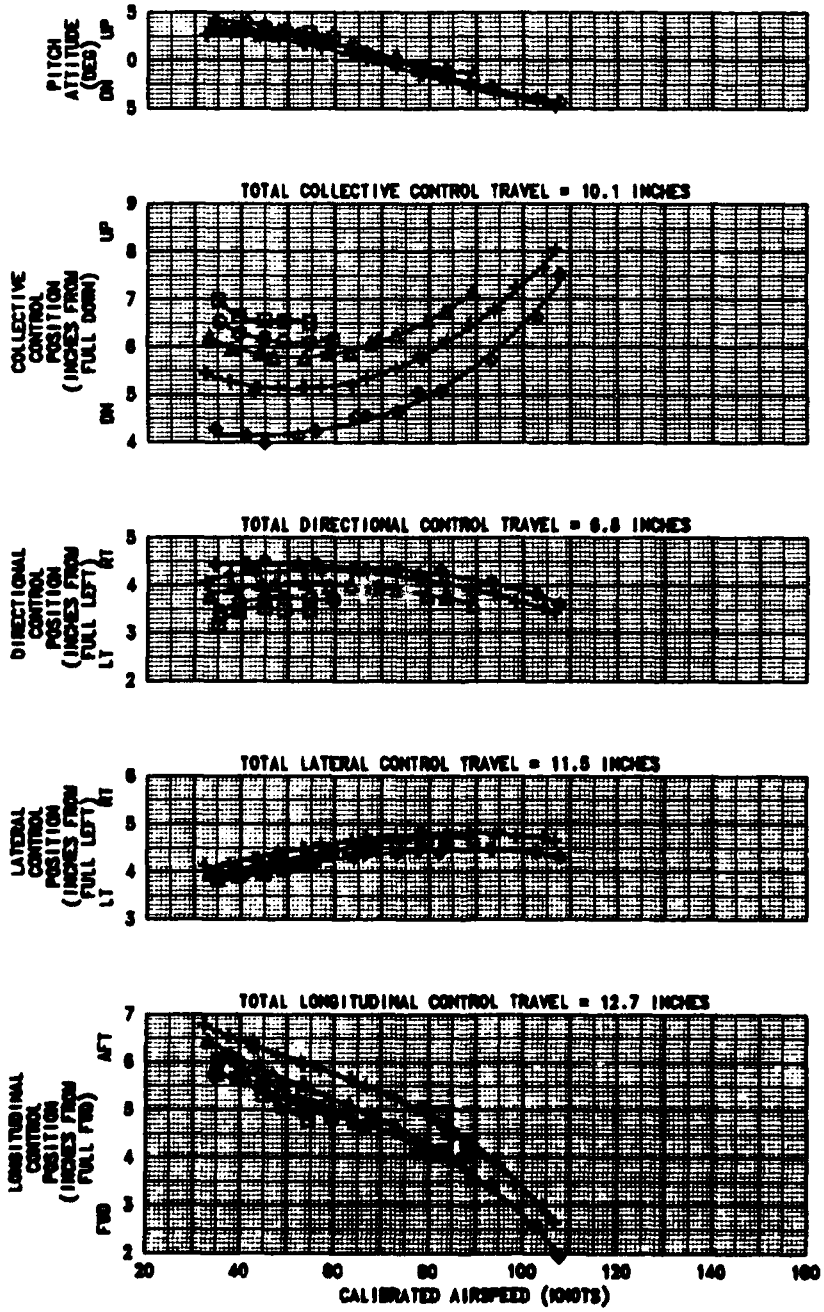


FIGURE E-49
COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3110	102.4 (MID)	5600	24.5	477	64

NOTES: 1. EPS EMPTY, BALLAST BOX ON
2. TRIM FLIGHT CONDITION: LEVEL
3. SHADED SYMBOL DENOTES TRIM

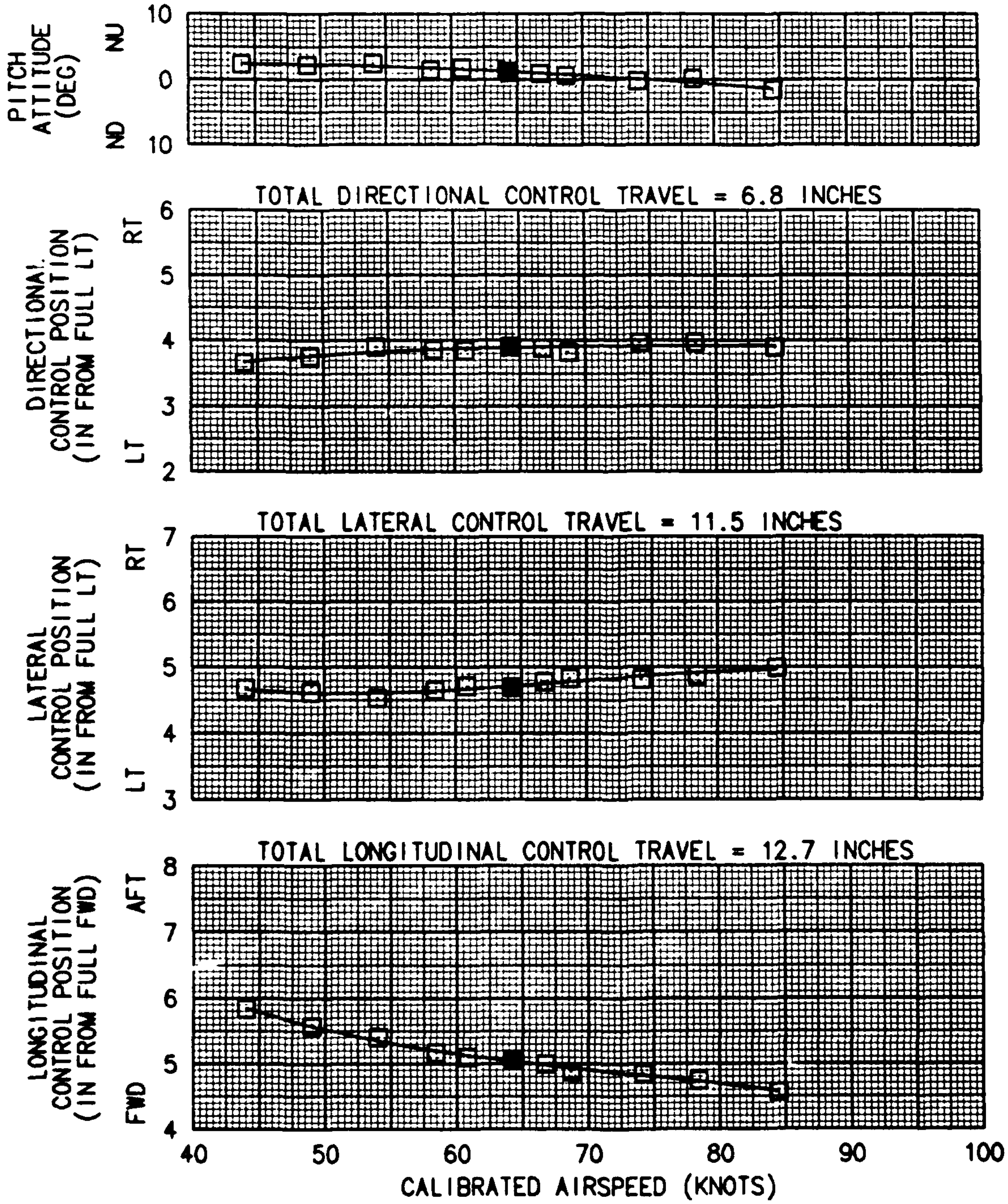


FIGURE E-50

COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3040	101.6 (MID)	5740	25.0	477	83

NOTES: 1. EPS EMPTY, BALLAST BOX ON
2. TRIM FLIGHT CONDITION: LEVEL
3. SHADED SYMBOL DENOTES TRIM

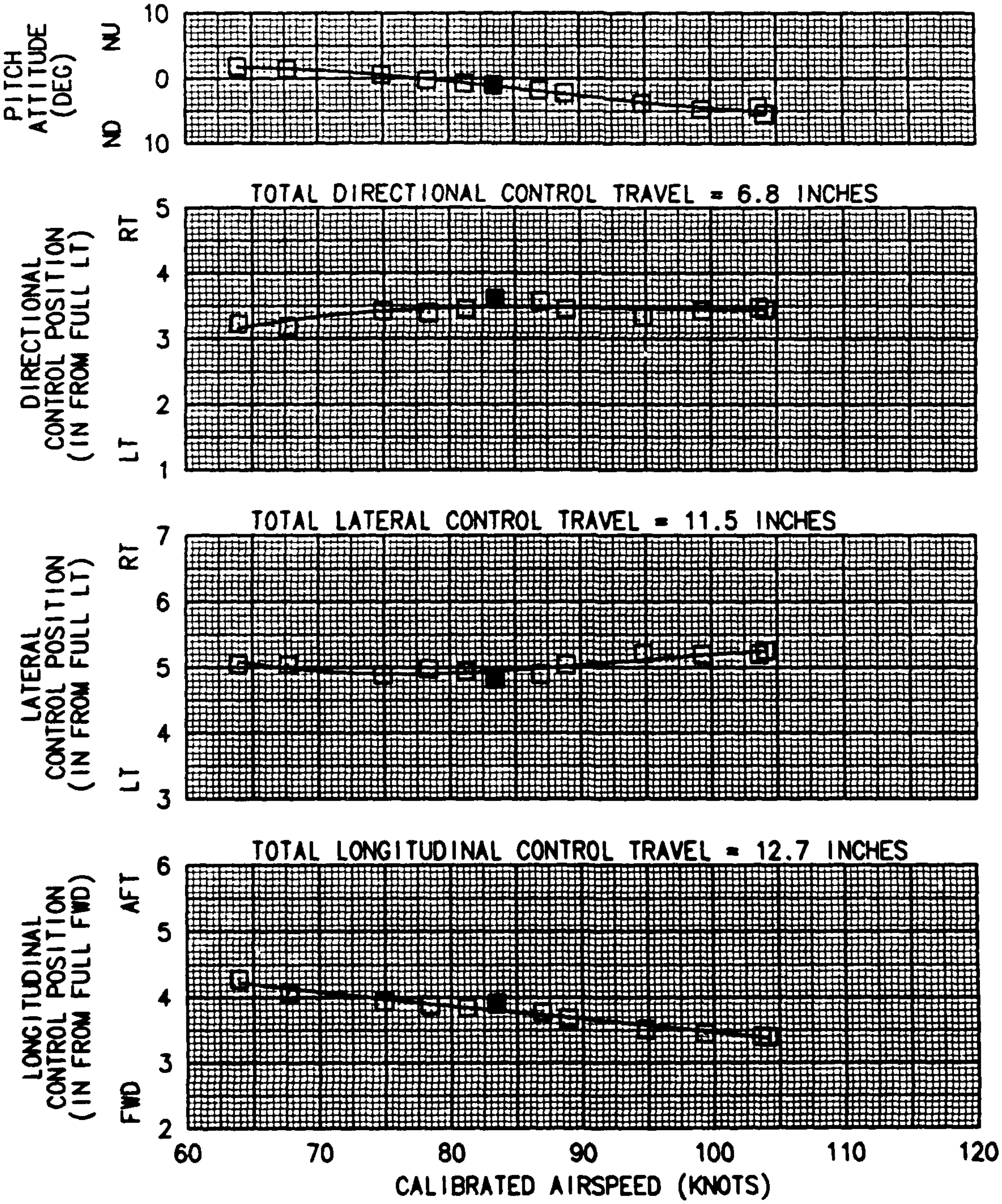


FIGURE E-51

COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
2790	101.2 (MID)	6190	25.4	477	100

NOTES: 1. EPS EMPTY, BALLAST BOX ON
2. TRIM FLIGHT CONDITION: LEVEL
3. SHADED SYMBOL DENOTES TRIM

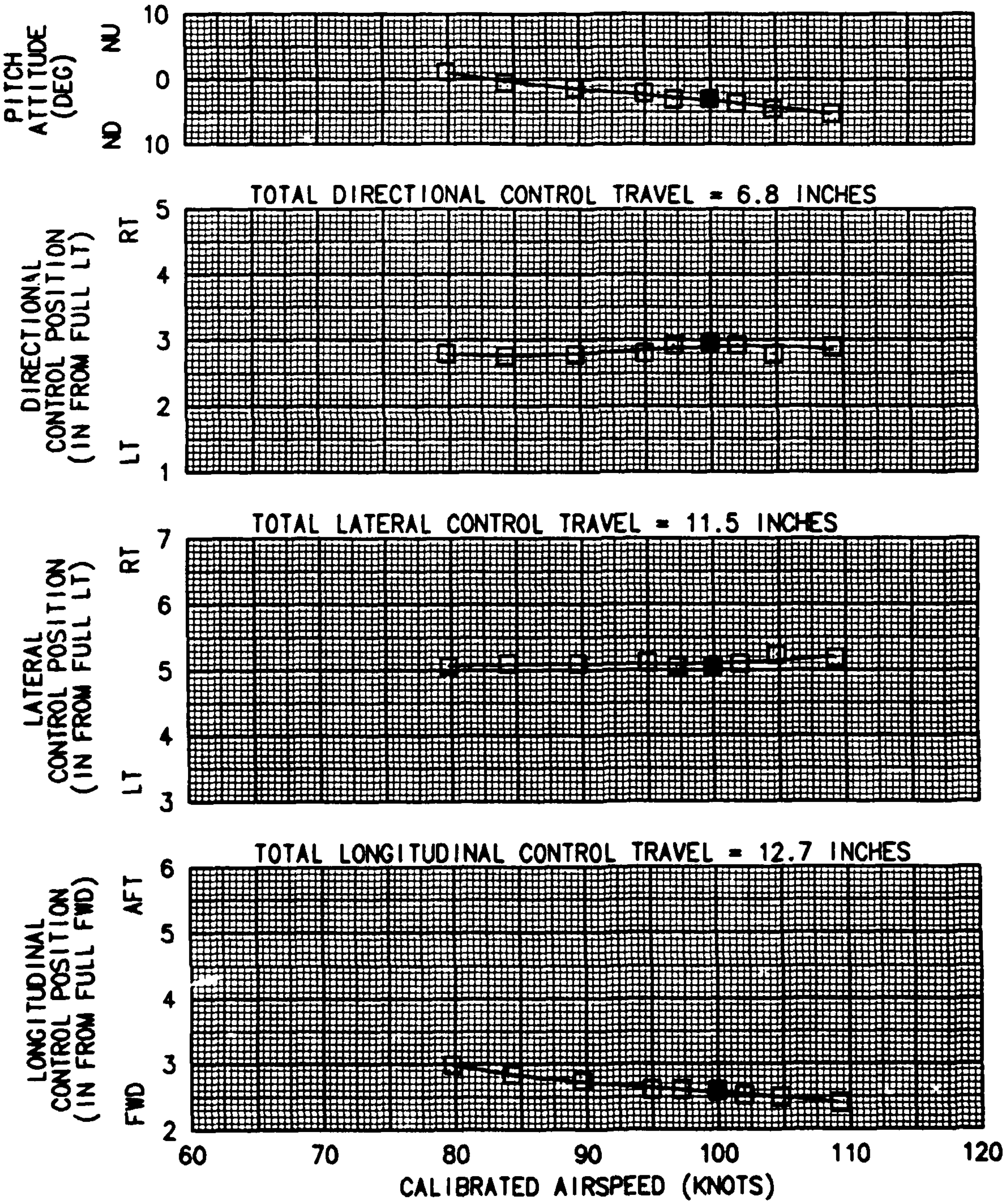


FIGURE E-52
COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
2900	101.0 (MID)	8490	19.0	477	64

NOTES: 1. EPS EMPTY, BALLAST BOX ON
2. TRIM FLIGHT CONDITION: 61 PSI CLIMB
3. SHADED SYMBOL DENOTES TRIM

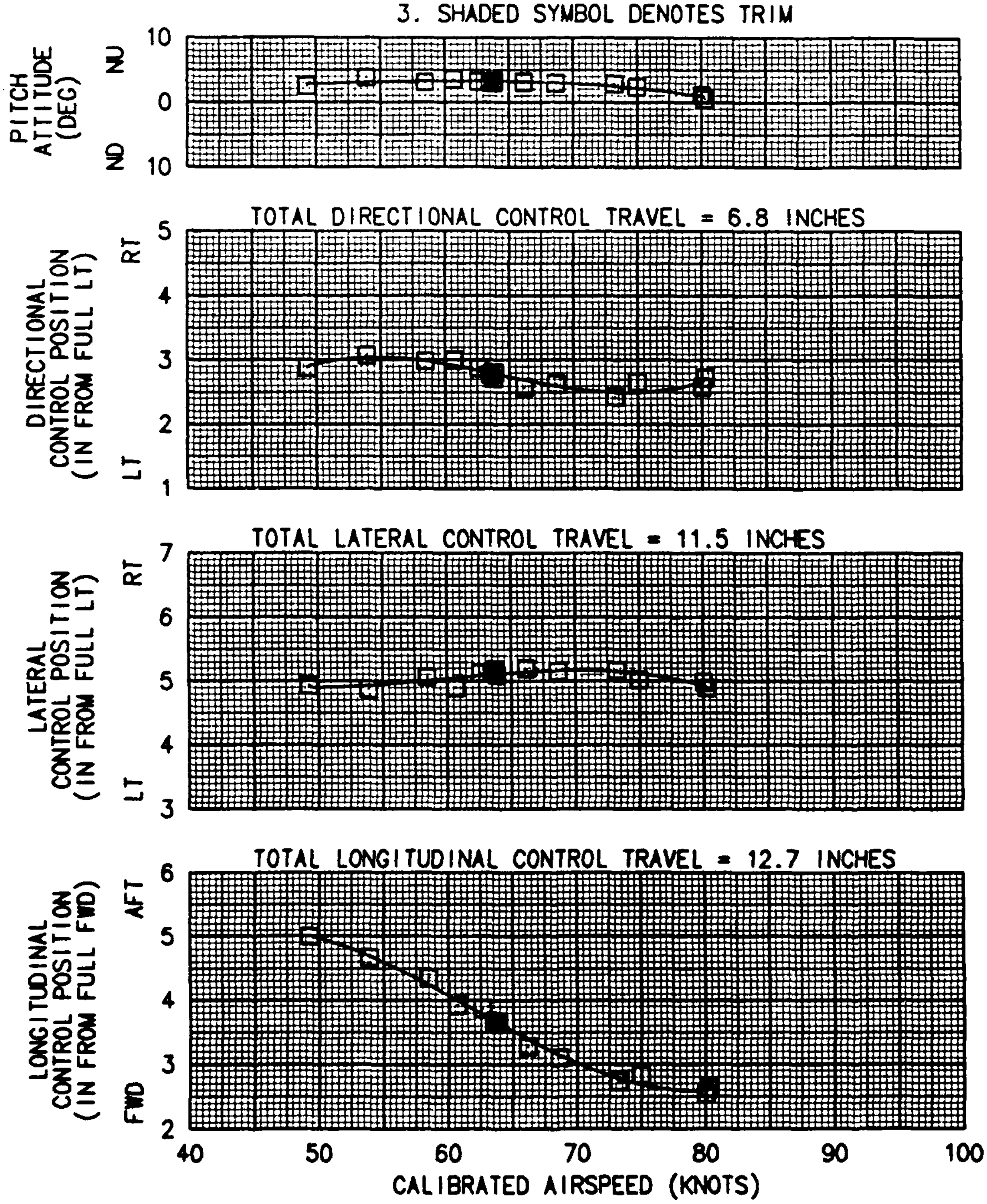


FIGURE E-53

COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
2950	101.0 (MID)	7220	21.7	477	64

NOTES: 1. EPS EMPTY, BALLAST BOX ON
2. TRIM FLIGHT CONDITION: 1000 FPM DESCENT
3. SHADED SYMBOL DENOTES TRIM

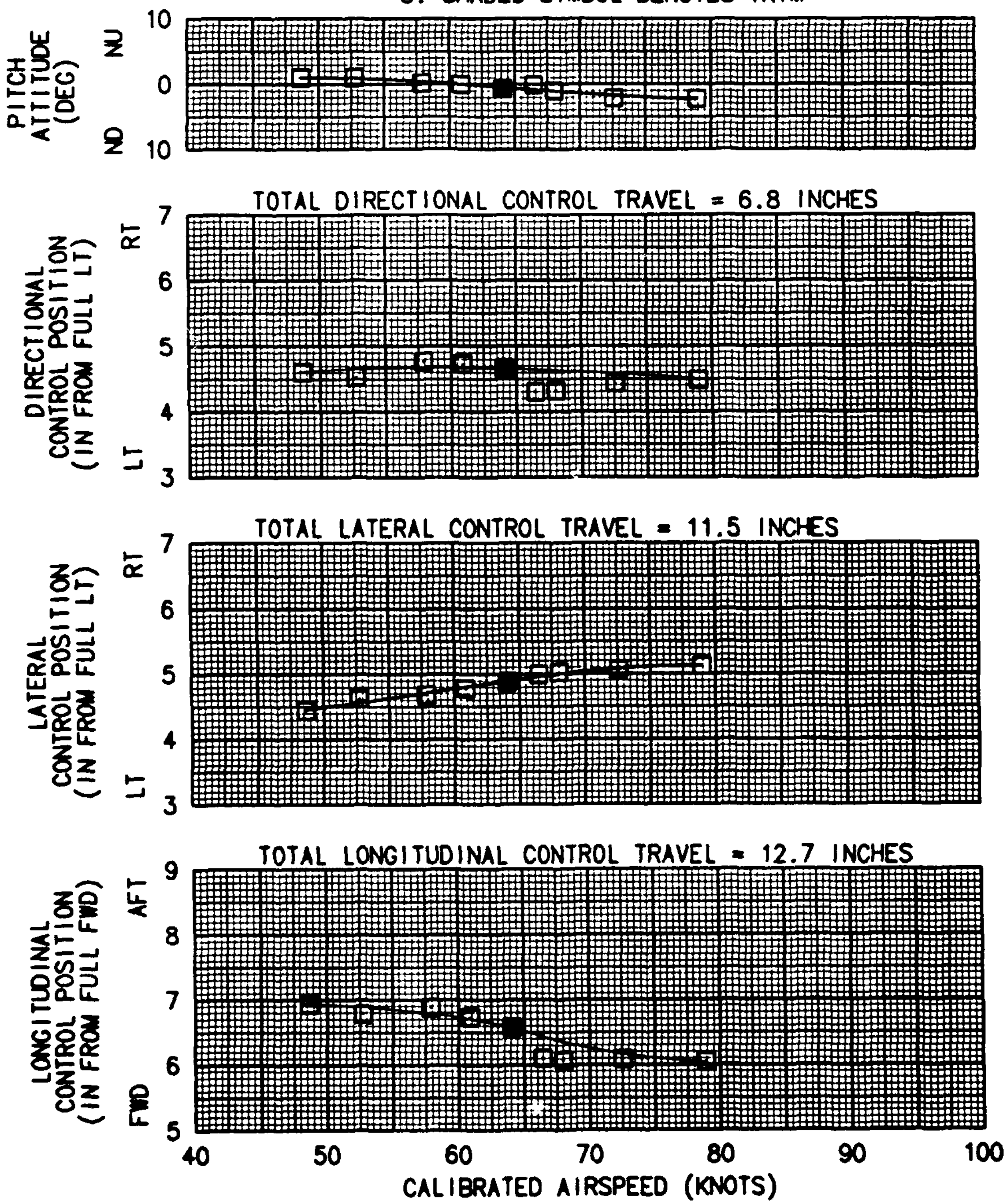


FIGURE E-54

COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3860	100.3 (MID)	5540	11.9	475	65

NOTES: 1. EPS FULL, BALLAST BOX ON
2. TRIM FLIGHT CONDITION: LEVEL
3. SHADED SYMBOL DENOTES TRIM

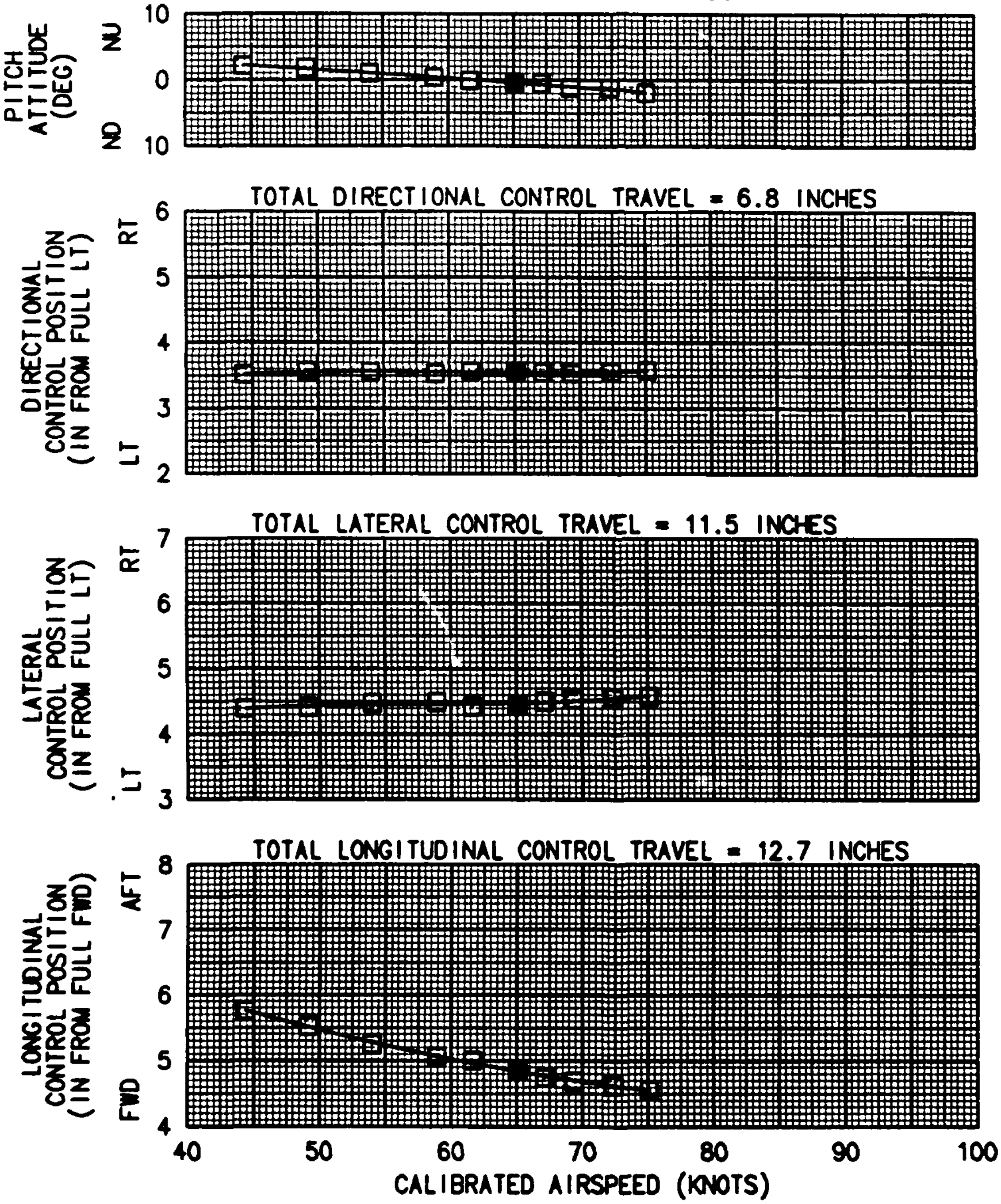


FIGURE E-55
COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3810	100.3 (MID)	5410	12.3	476	65

NOTES: 1. EPS FULL, BALLAST BOX ON
2. TRIM FLIGHT CONDITION: 61 PSI CLIMB
3. SHADED SYMBOL DENOTES TRIM

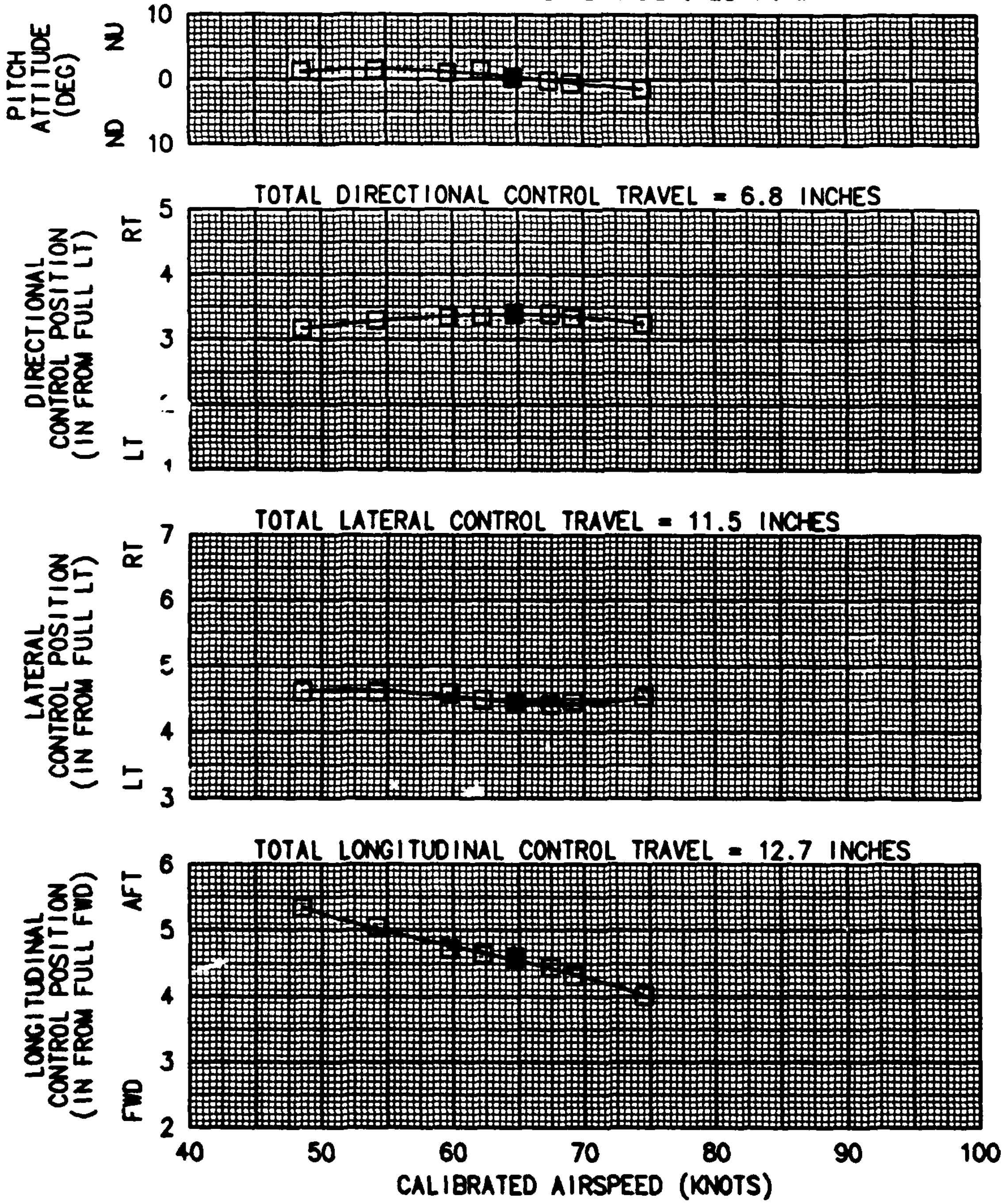


FIGURE E-56
COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3790	100.3 (MID)	5930	10.7	476	64

NOTES: 1. EPS FULL, BALLAST BOX ON
2. TRIM FLIGHT CONDITION: 1000 FPM DESCENT
3. SHADED SYMBOL DENOTES TRIM

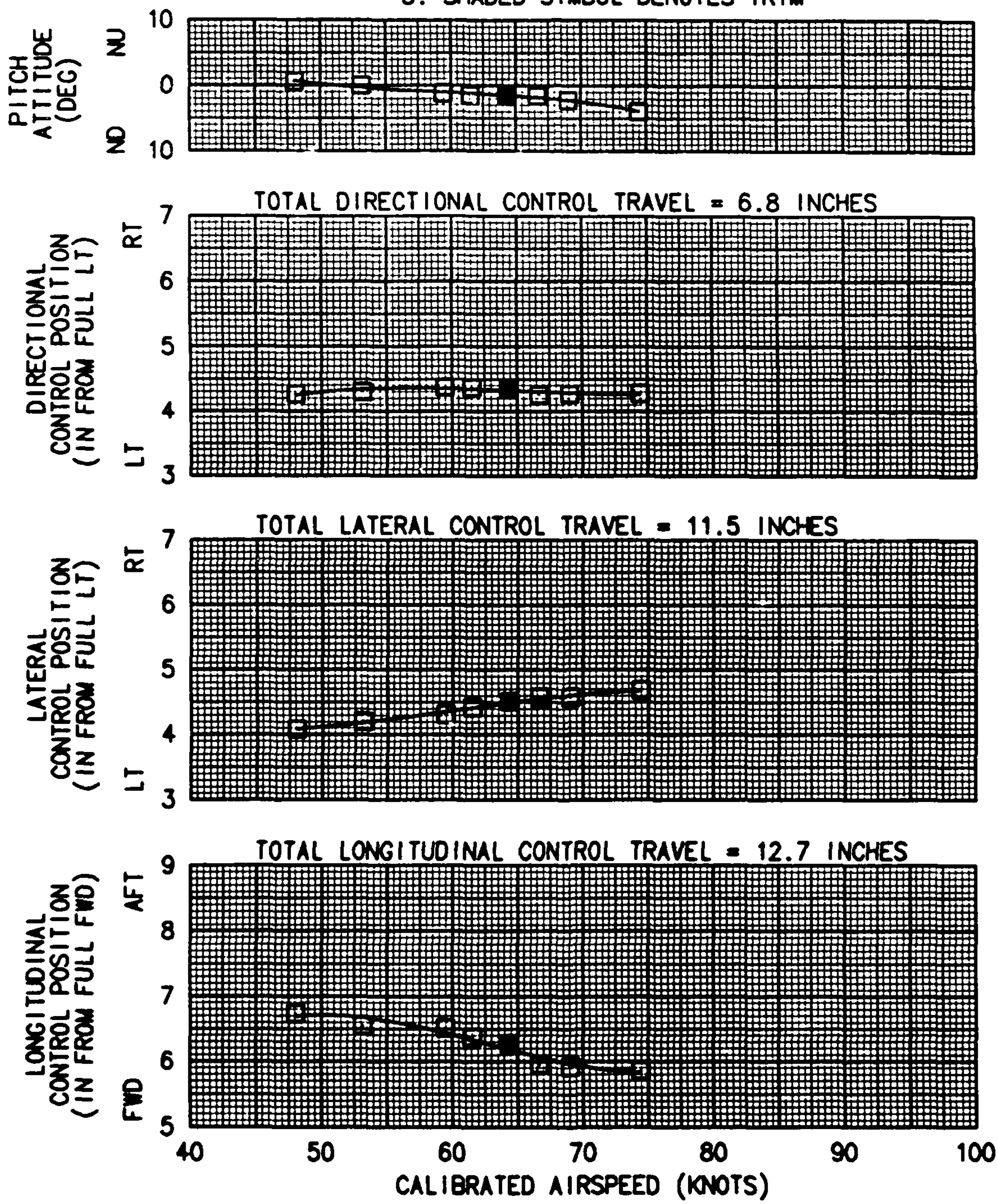


FIGURE E-57

COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3860	100.2 (MID)	5730	23.5	477	65

NOTES: 1. PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL
3. SHADED SYMBOL DENOTES TRIM

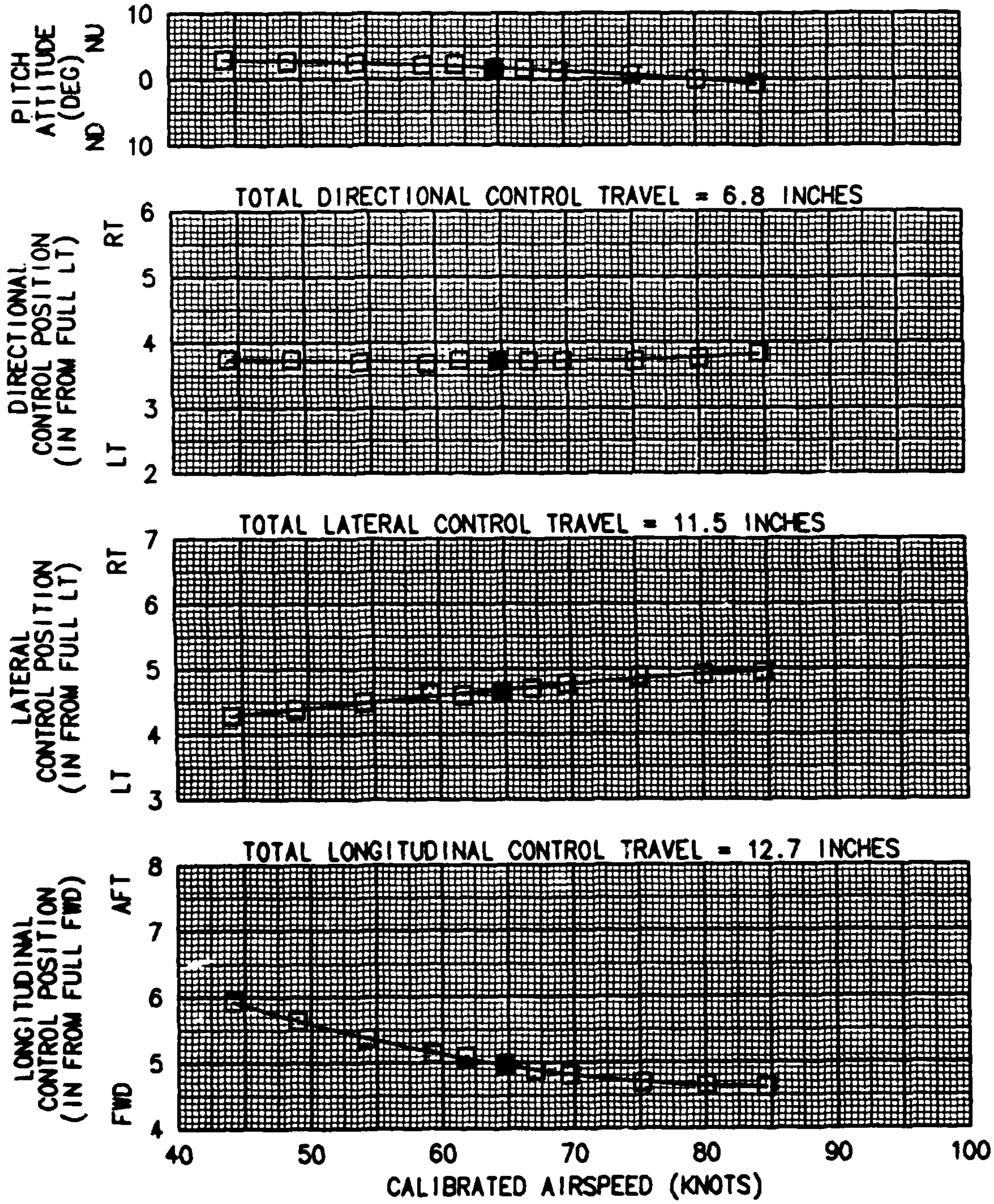


FIGURE E-58
COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3800	100.2 (MID)	6560	23.0	477	64

NOTES: 1. PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: 59 PSI CLIMB
3. SHADED SYMBOL DENOTES TRIM

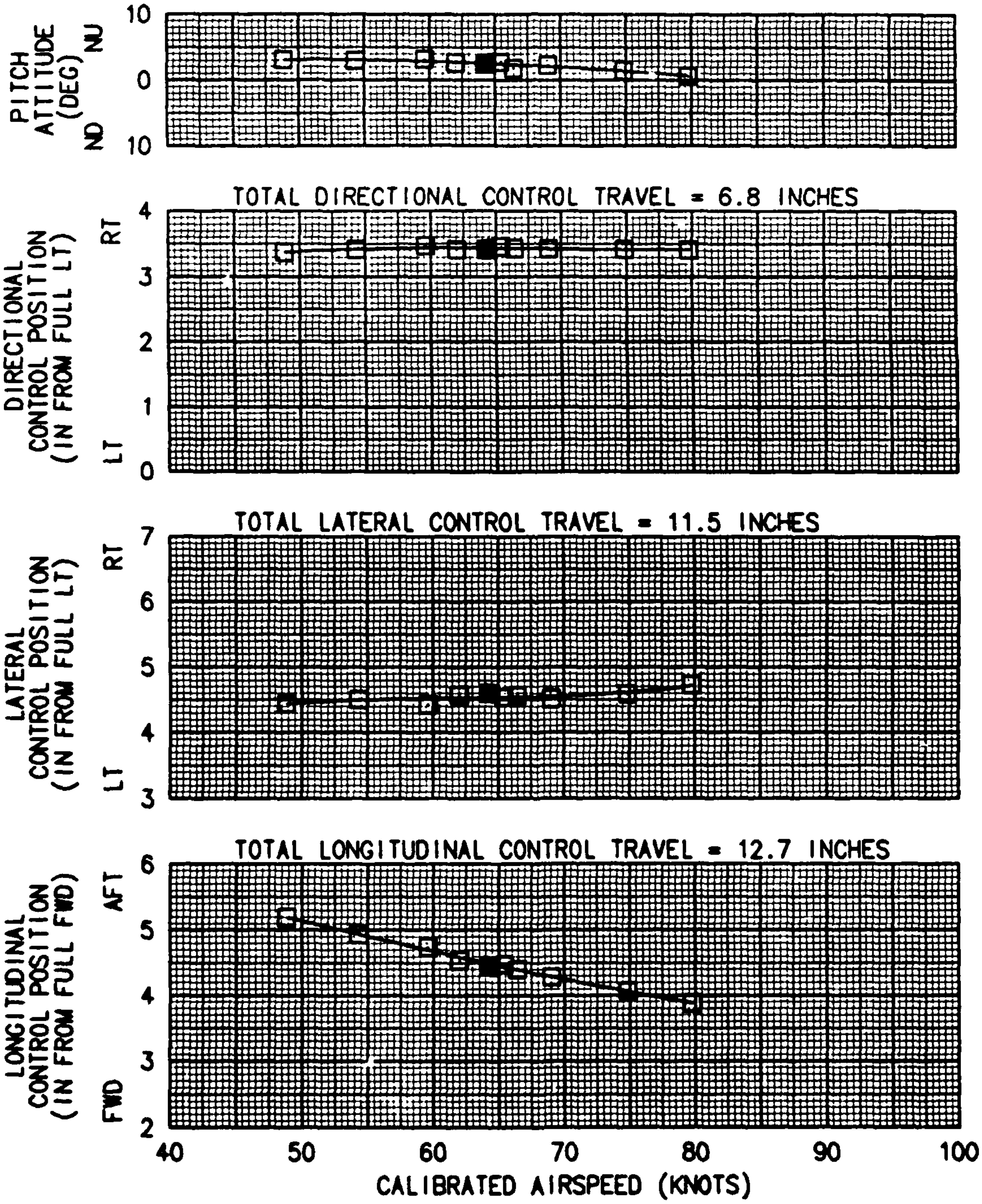


FIGURE E-59

COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3780	100.2 (MID)	7090	22.5	477	64

NOTES: 1. PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: 1000 FPM DESCENT
3. SHADED SYMBOL DENOTES TRIM

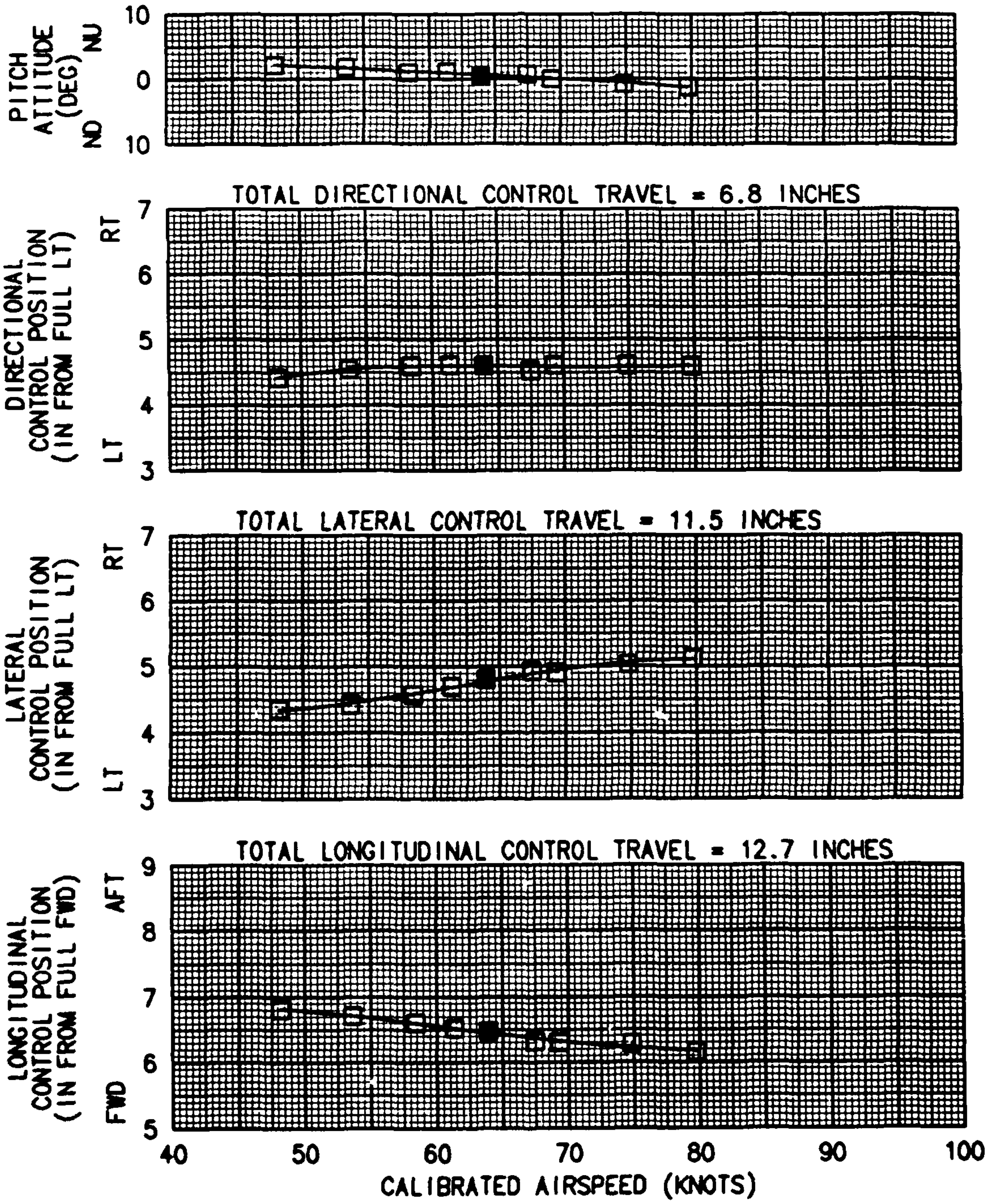


FIGURE E-60

COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3530	100.8 (MID)	5230	21.0	477	64

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL
3. SHADED SYMBOL DENOTES TRIM

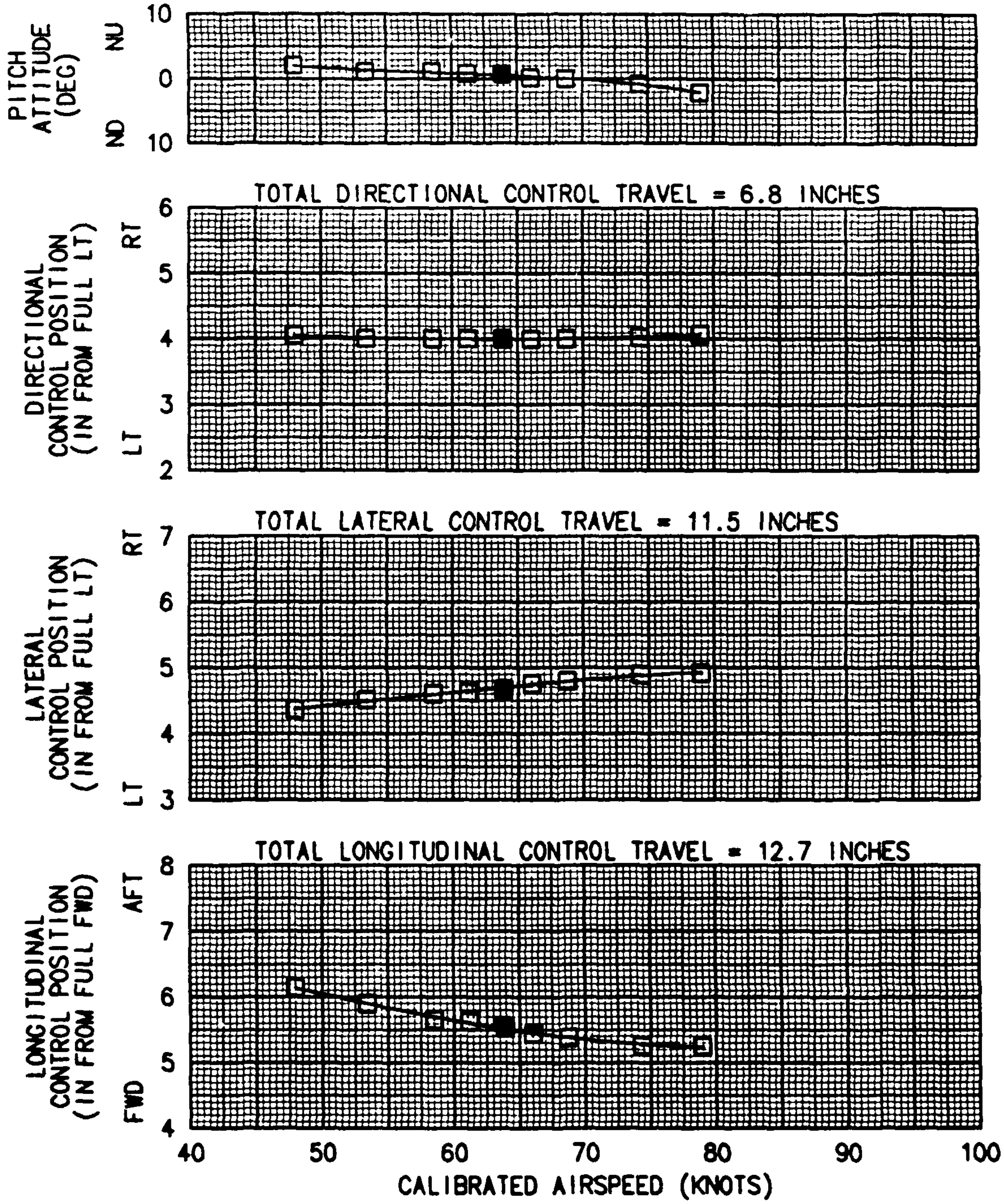


FIGURE E-61
COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3460	100.8 (MID)	6070	21.5	477	94

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL
3. SHADED SYMBOL DENOTES TRIM

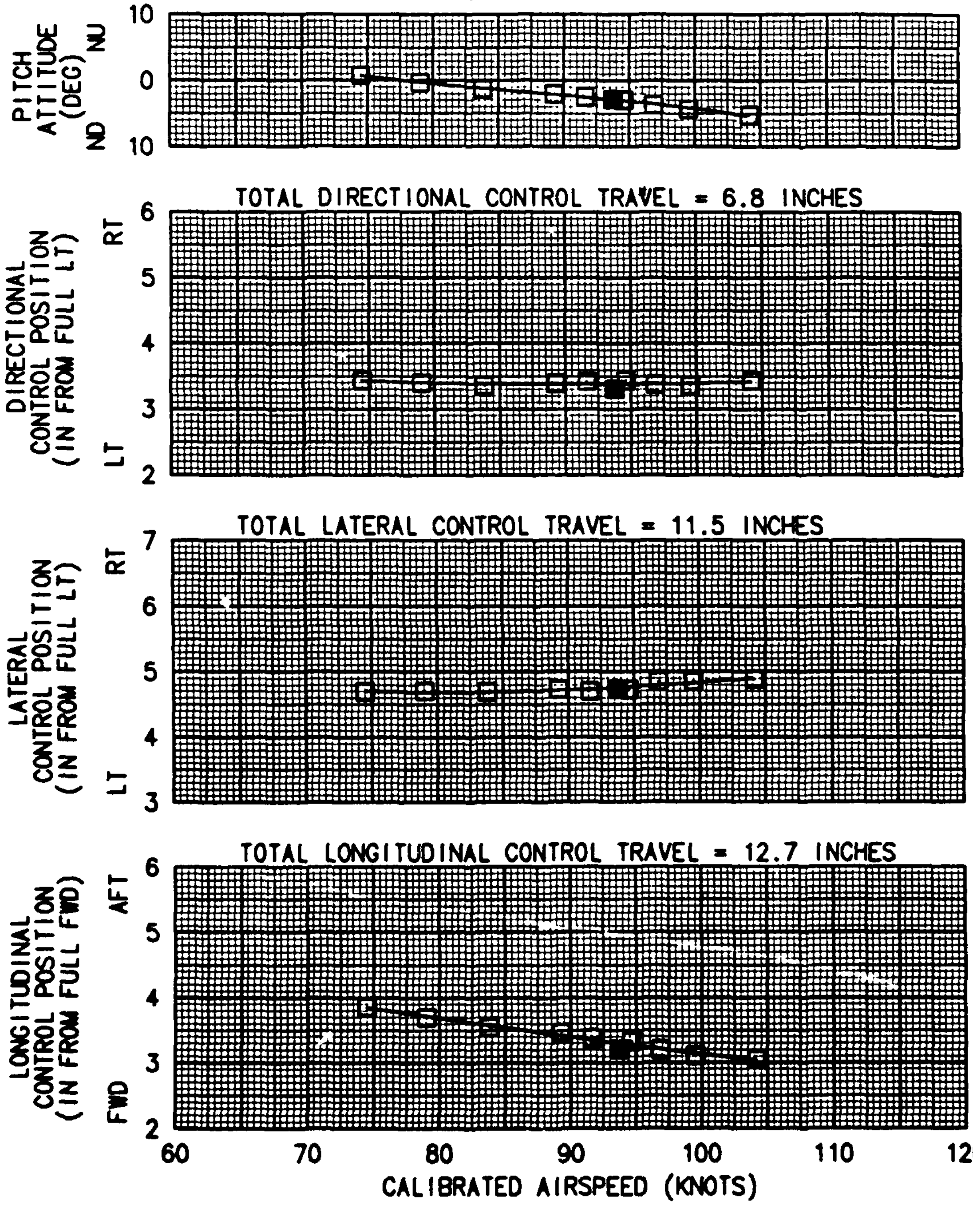


FIGURE E-62
COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3660	101.6 (MID)	7070	23.0	477	64

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: 59 PSI CLIMB
3. SHADED SYMBOL DENOTES TRIM

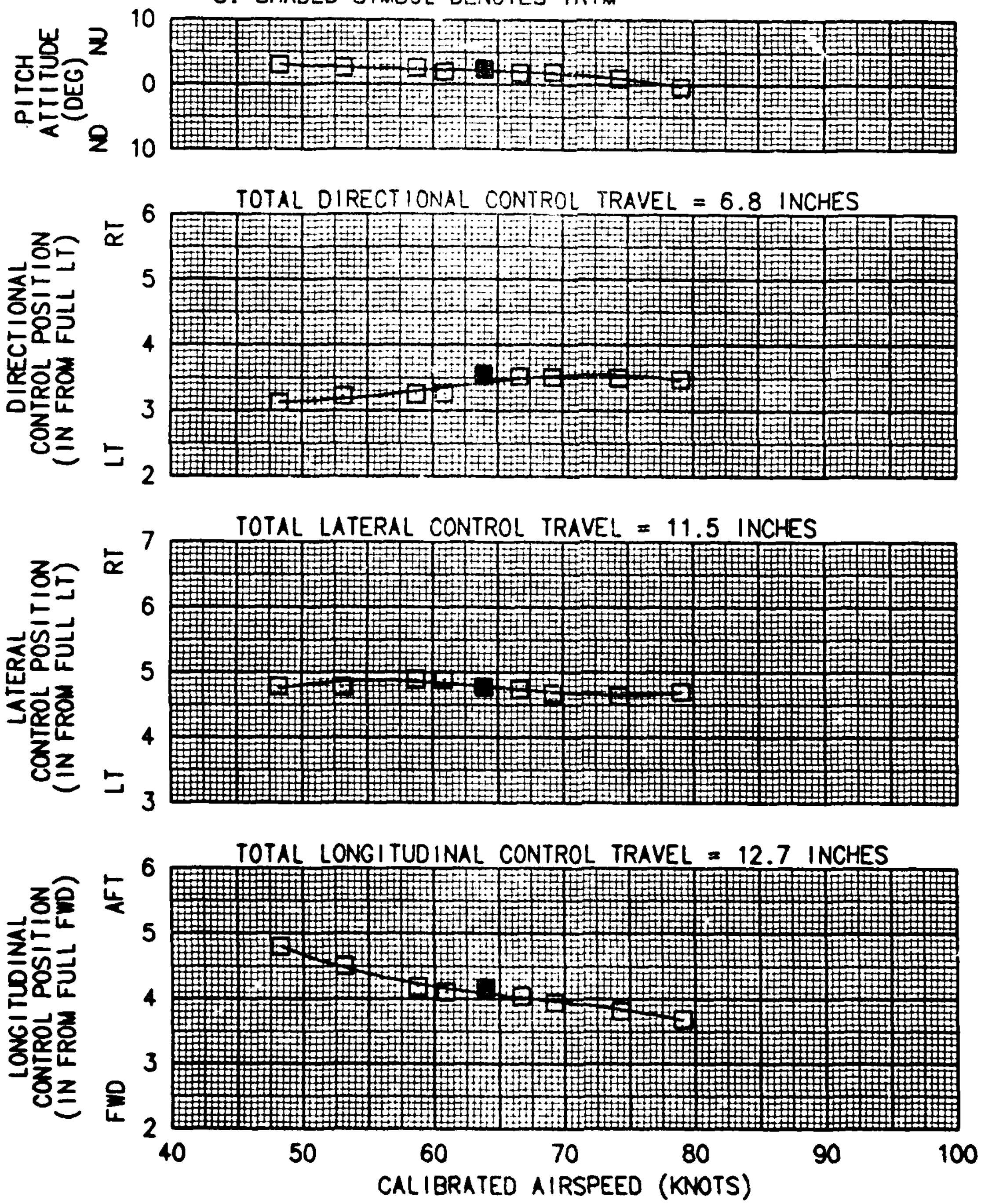


FIGURE E-63

COLLECTIVE FIXED STATIC LONGITUDINAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3640	101.6 (MID)	7570	22.5	477	63

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: 1000 FPM DESCENT
3. SHADED SYMBOL DENOTES TRIM

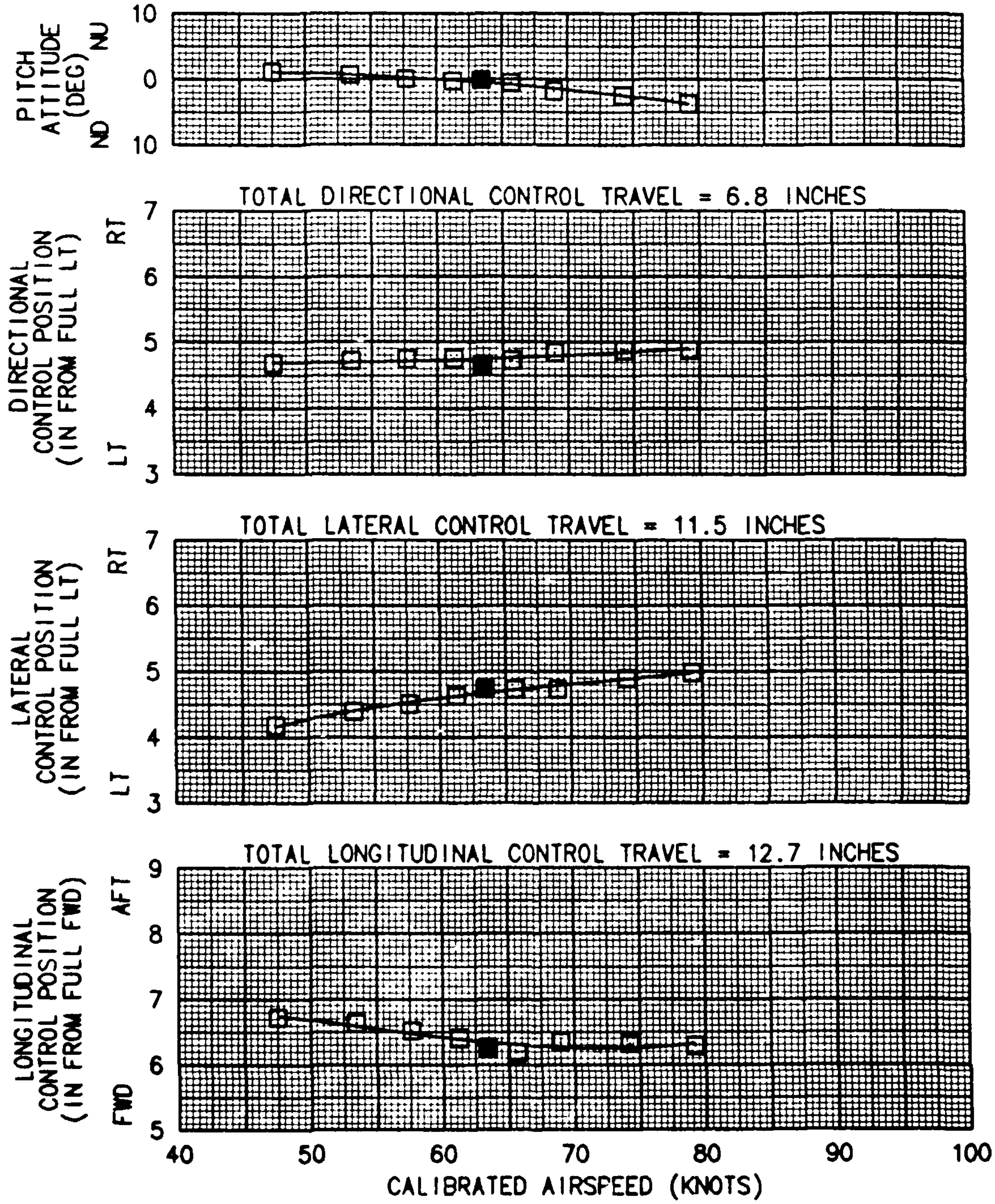


FIGURE E-64
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
2980	101.7(MID)	6160	17.0	477	63

NOTES: 1. EPS EMPTY
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

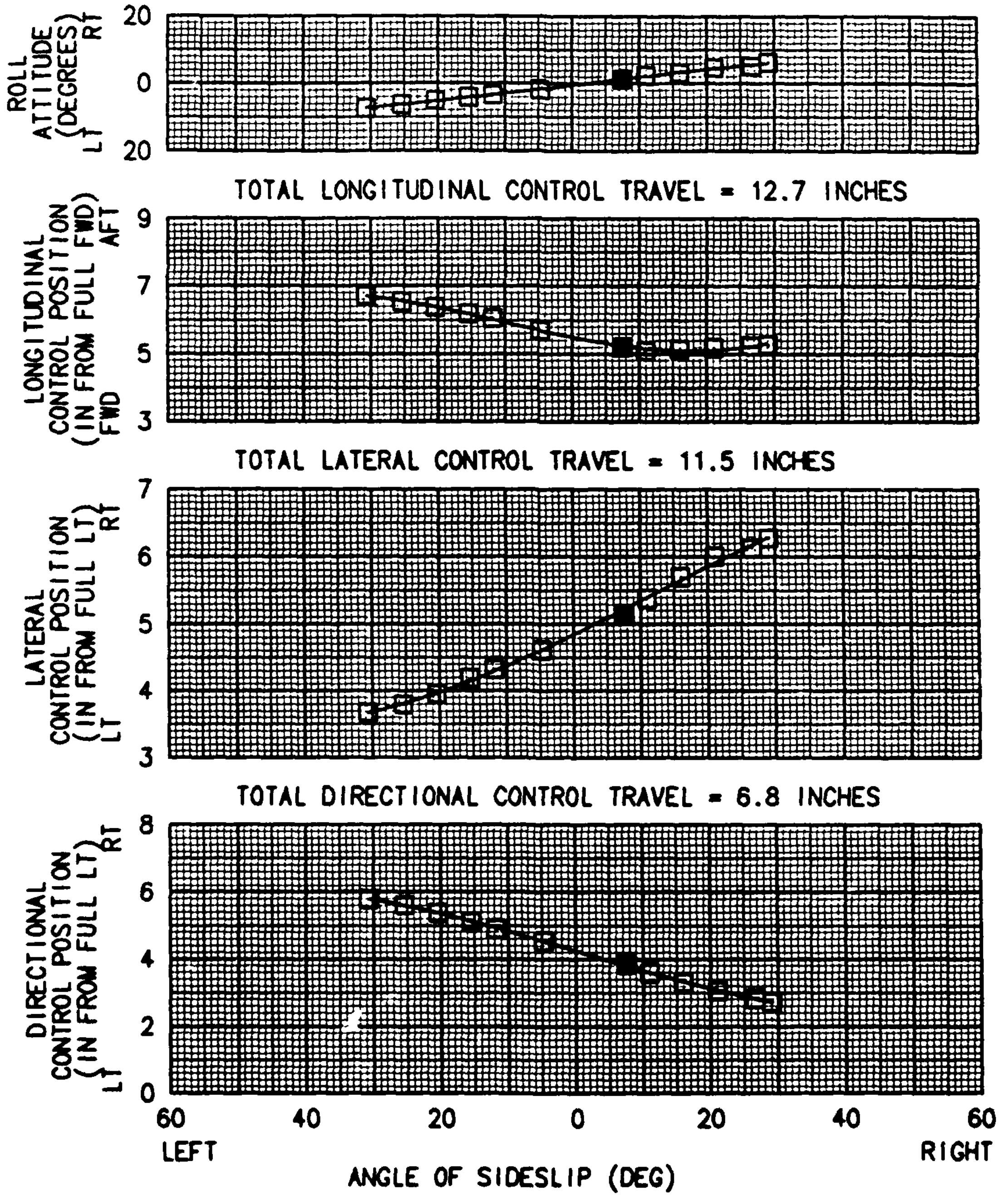


FIGURE E-65

STATIC LATERAL-DIRECTIONAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
2950	101.7(MID)	6180	18.0	477	84

NOTES: 1. EPS EMPTY
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

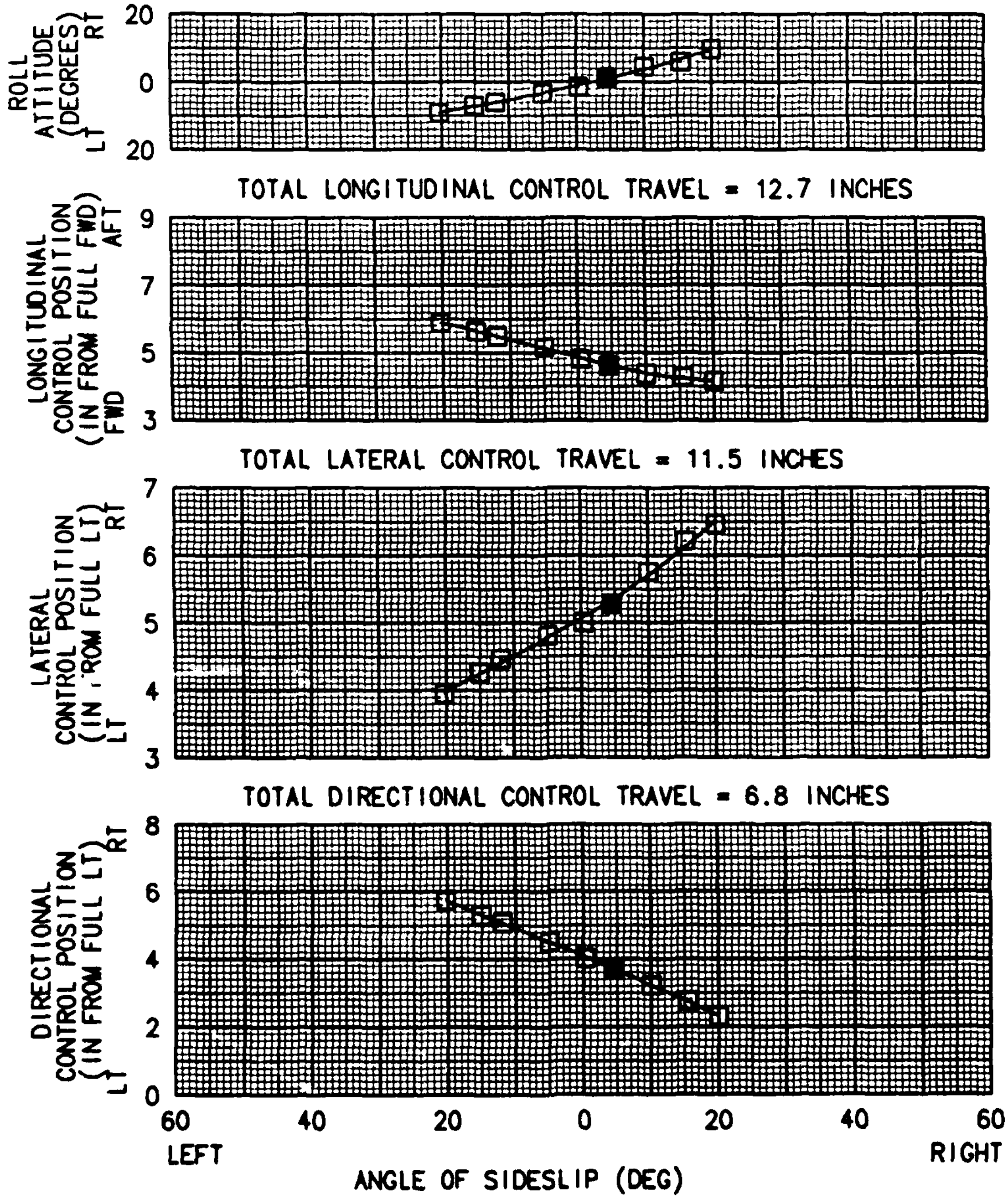


FIGURE E-66
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3770	101.2(MID)	6220	28.0	477	64

NOTES: 1. EPS FULL
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

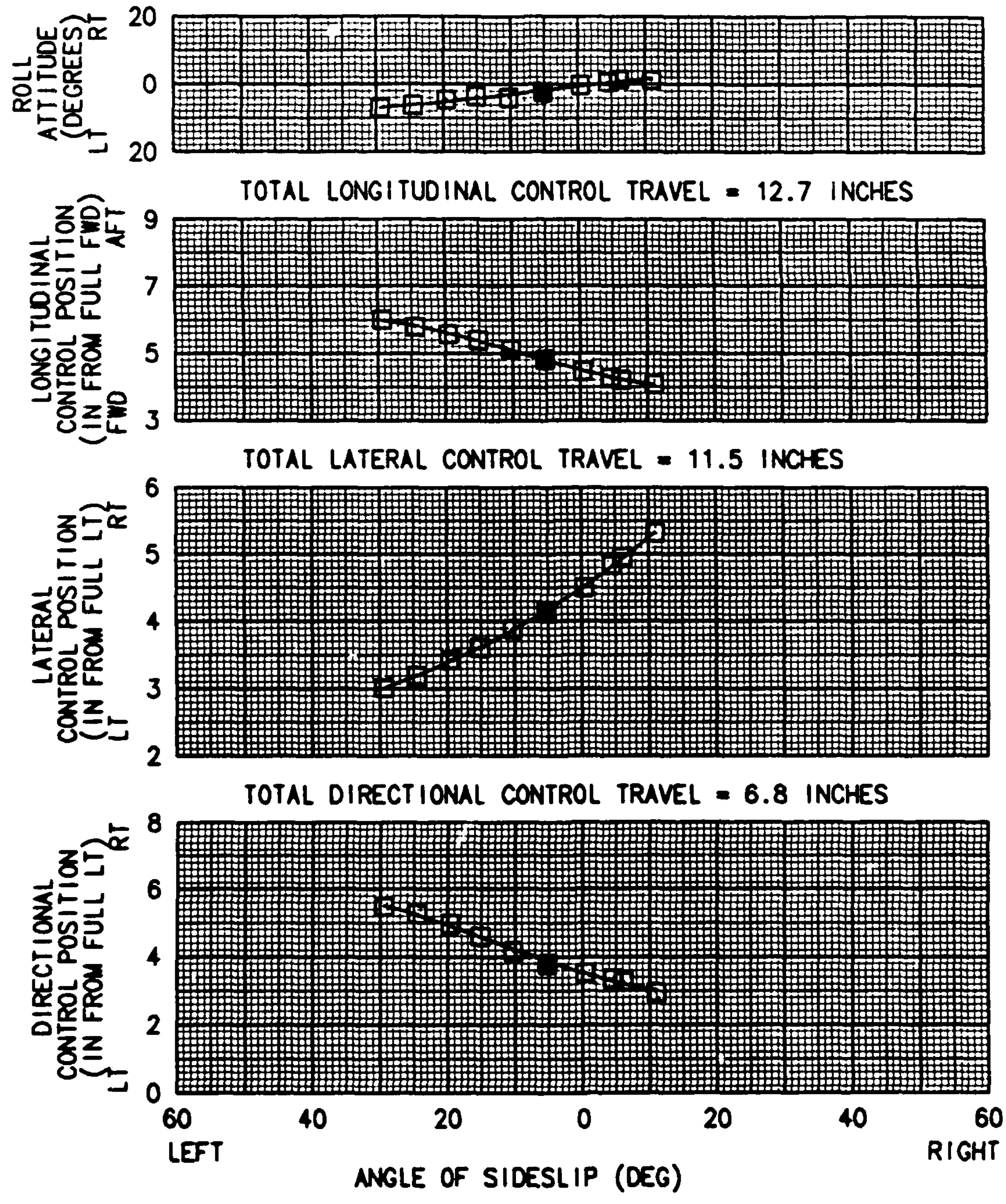


FIGURE E-67
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3820	101.2(MID)	6900	26.0	477	64

NOTES: 1. EPS FULL
2. TRIM FLIGHT CONDITION: 59 PSI CLIMB
3. SHADED SYMBOL DENOTES TRIM

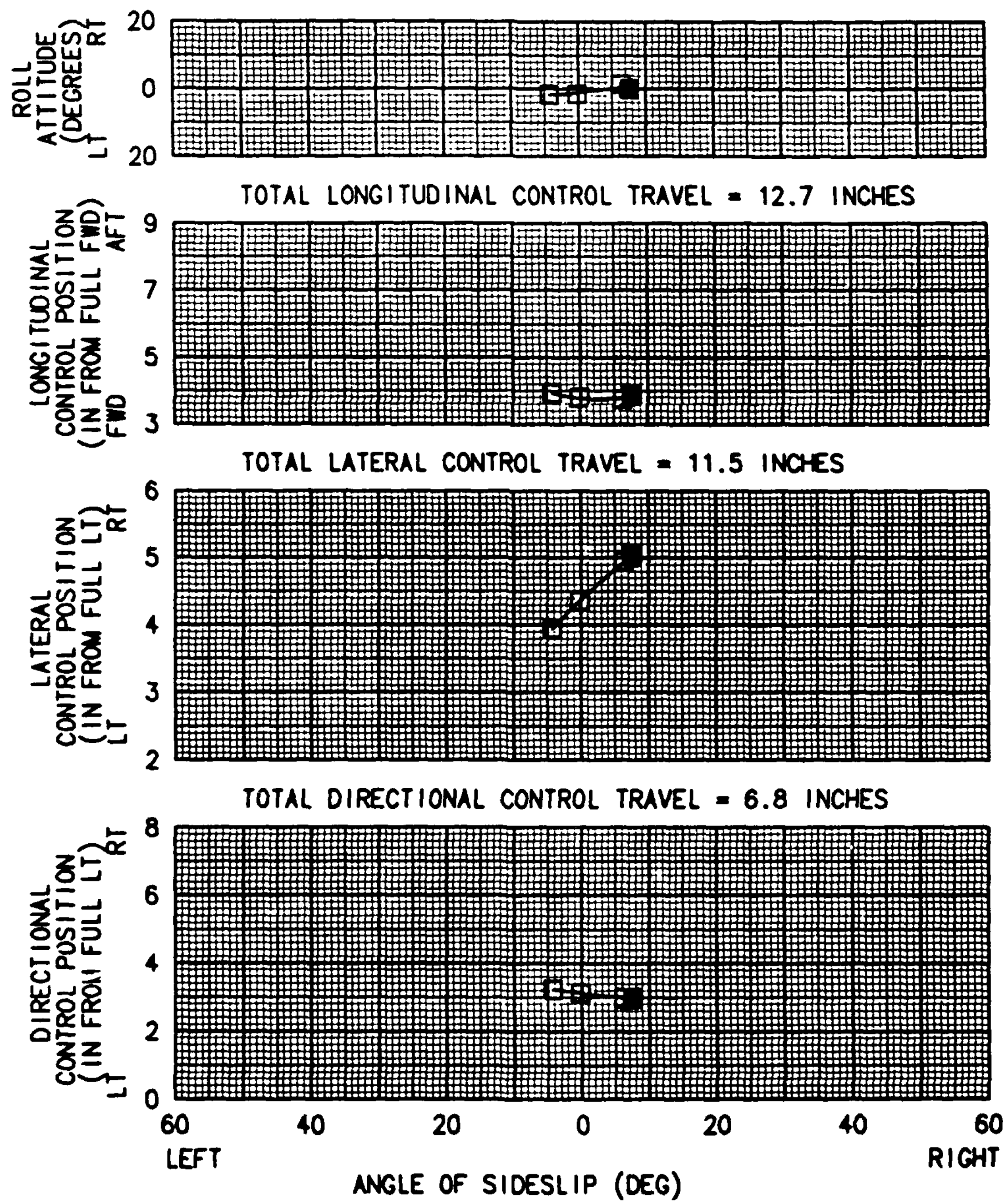


FIGURE E-68
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3820	100.4(MID)	7160	24.0	477	65

NOTES: 1. PLANK WITH TWO 19-SHOT ROCKECT LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVFL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

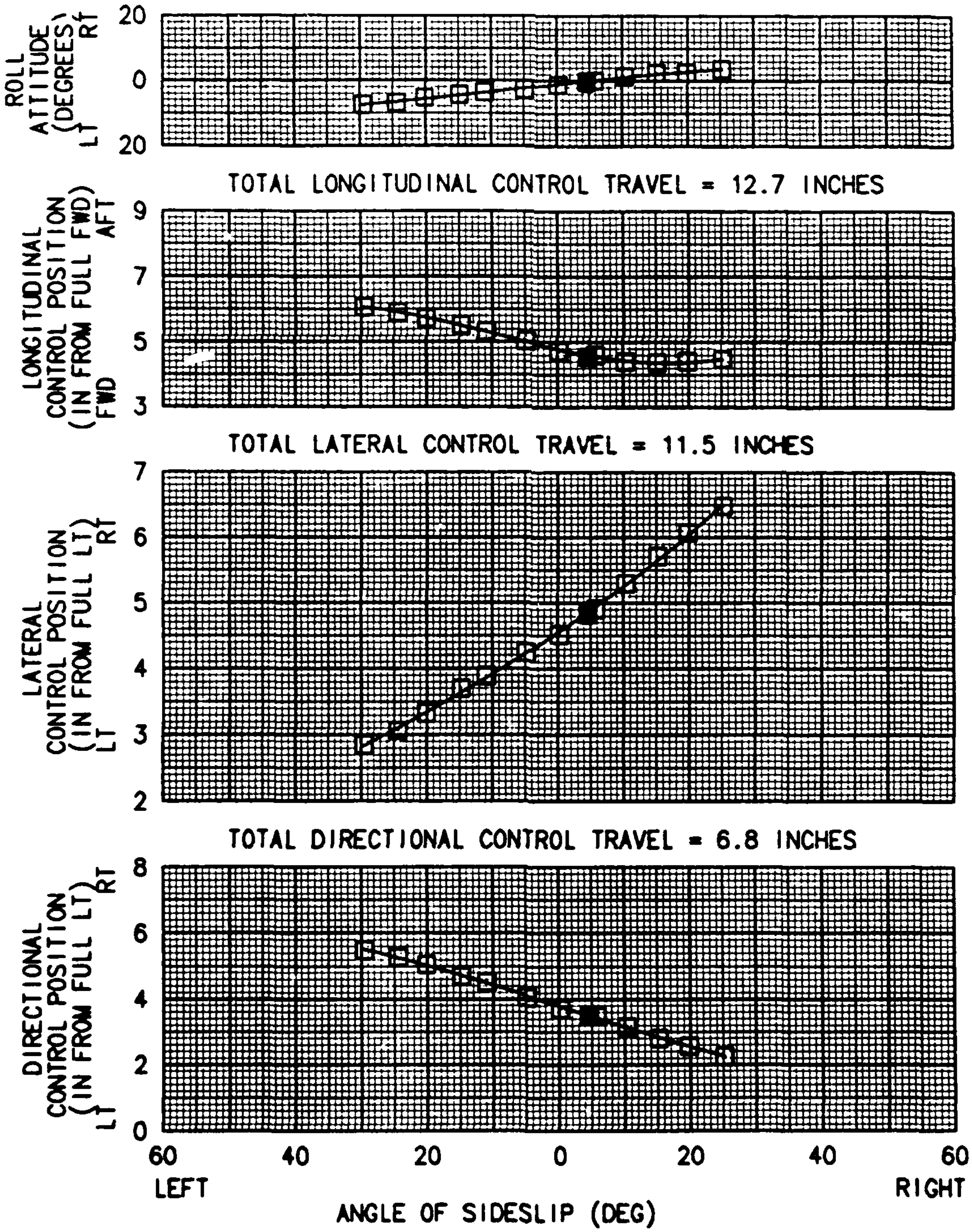


FIGURE E-69
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3720	100.4(MID)	6020	25.0	477	85

NOTES: 1. PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

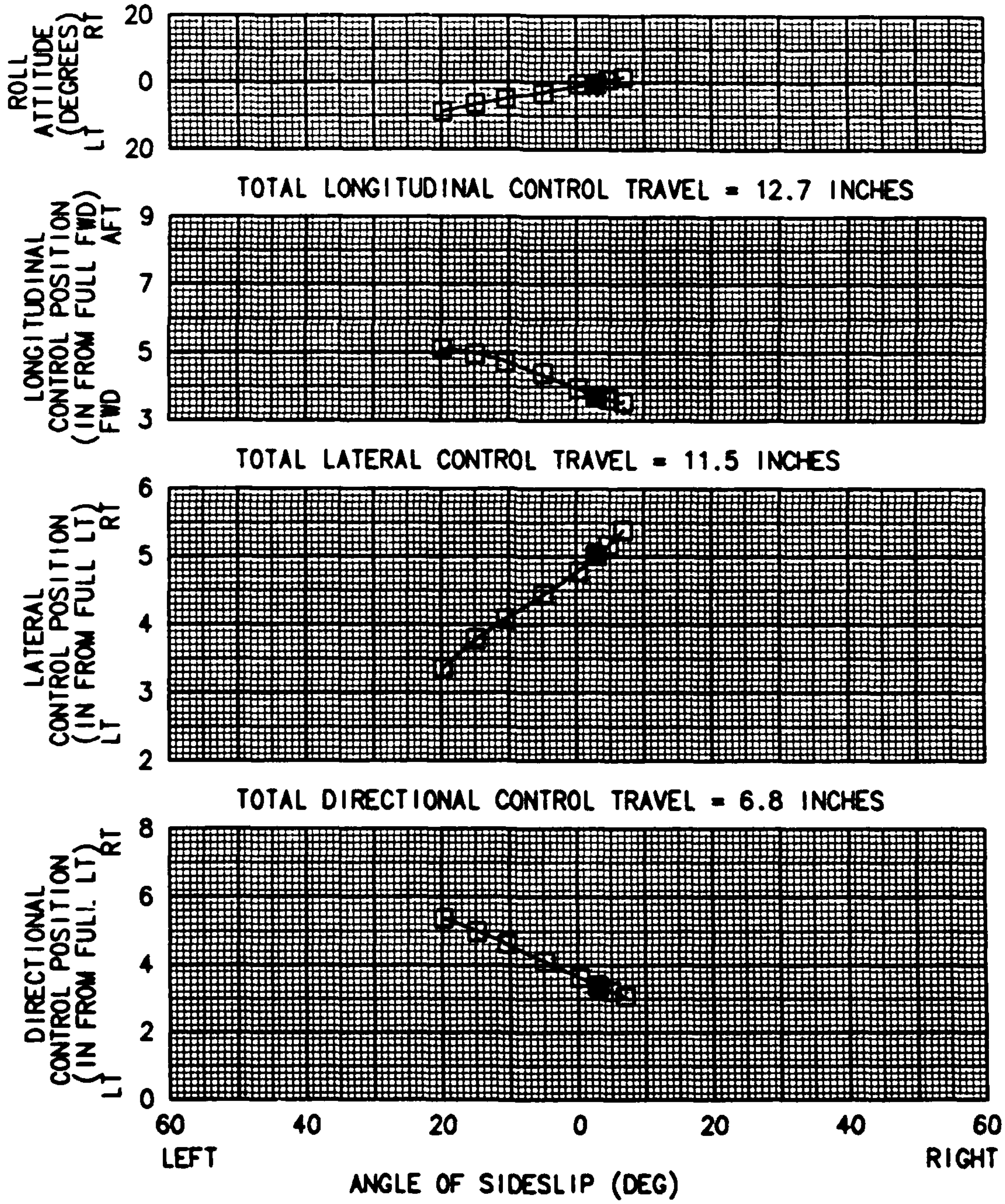


FIGURE E-70
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3610	100.5(MID)	7320	24.0	477	65

NOTES: 1. PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: 59 PSI CLIMB
3. SHADED SYMBOL DENOTES TRIM

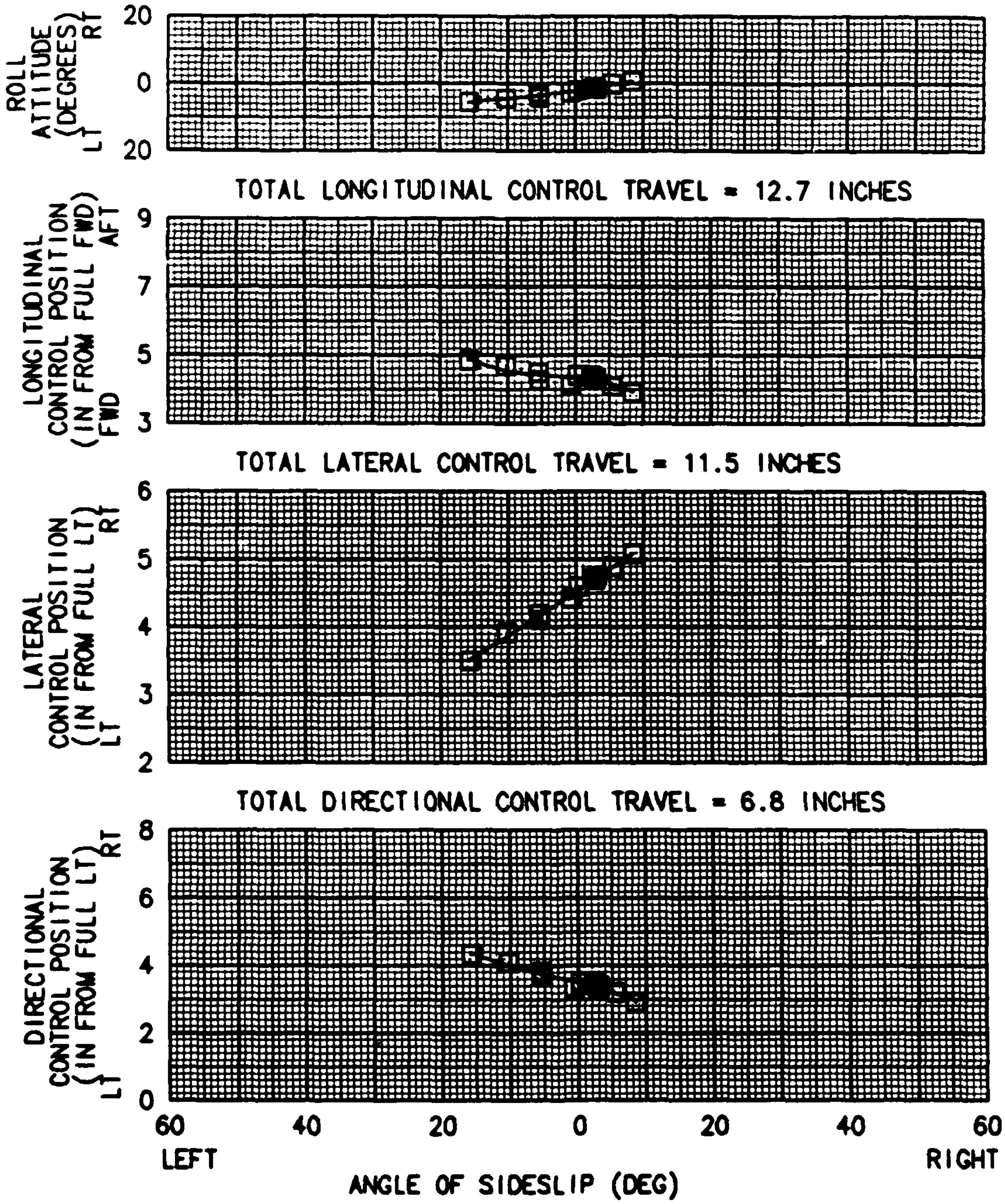


FIGURE E-71
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3640	100.4(MID)	6240	24.5	477	65

NOTES: 1. PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: 1000 FPM DESCENT
3. SHADED SYMBOL DENOTES TRIM

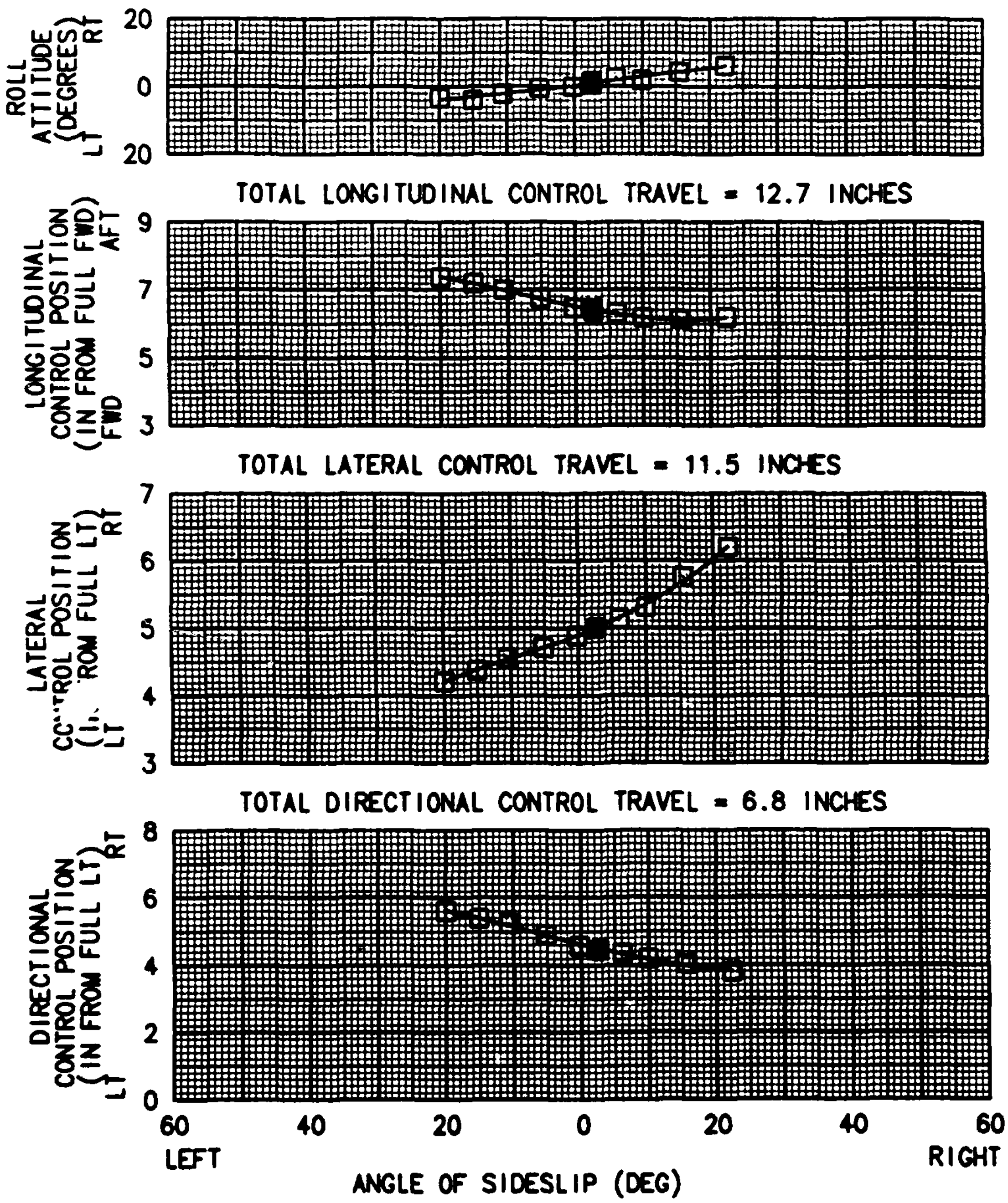


FIGURE E-72

STATIC LATERAL-DIRECTIONAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	(BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3190	100.3(MID)	4.2(RT)	6912	23.0	477	63

NOTES: 1. CONFIG 2, RT ASYMM. LOADING
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

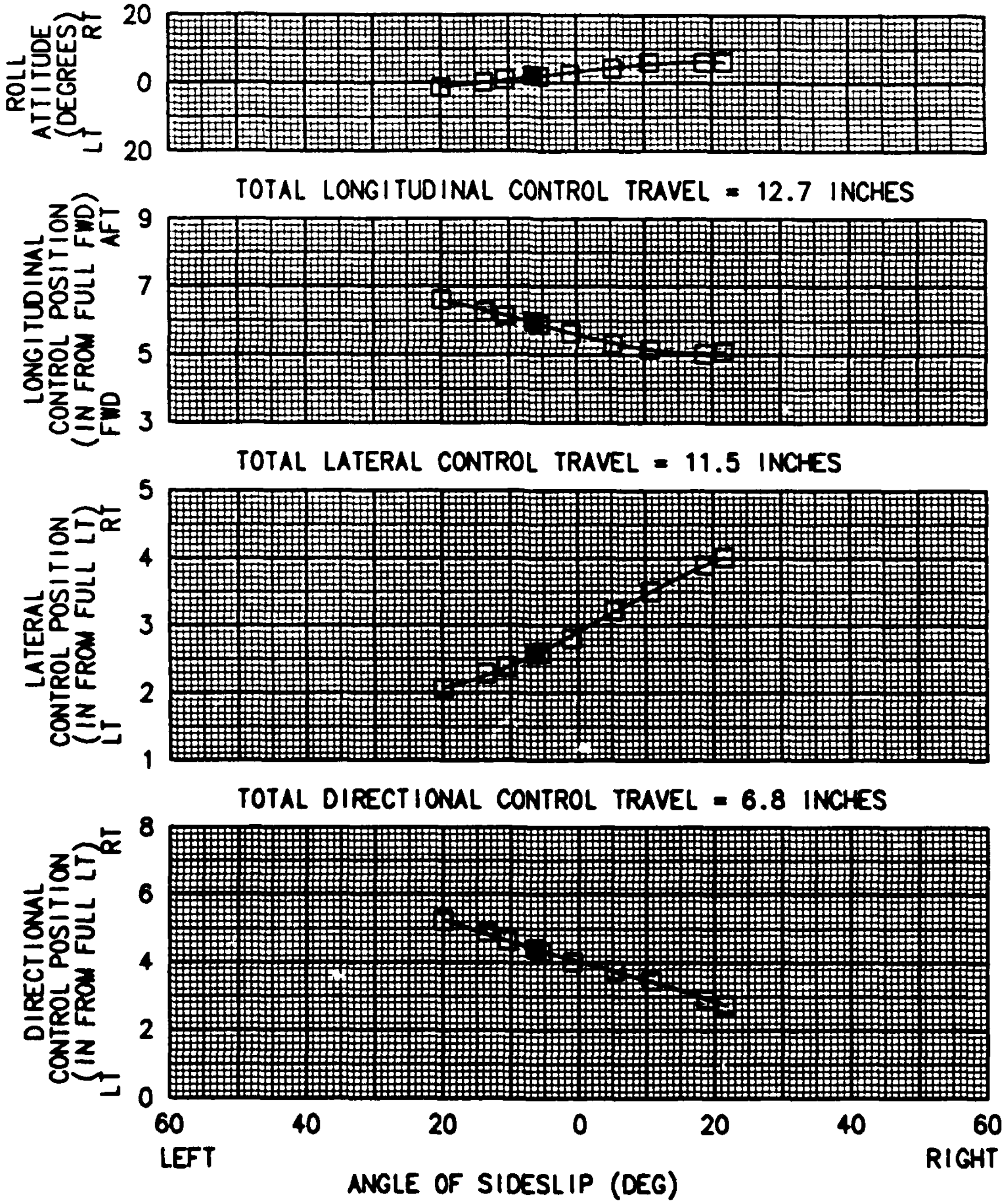


FIGURE E-73
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	(BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3160	101.7(MID)	4.2(RT)	6940	23.8	477	84

NOTES: 1. CONFIG 2, RT ASYMM. LOADING
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

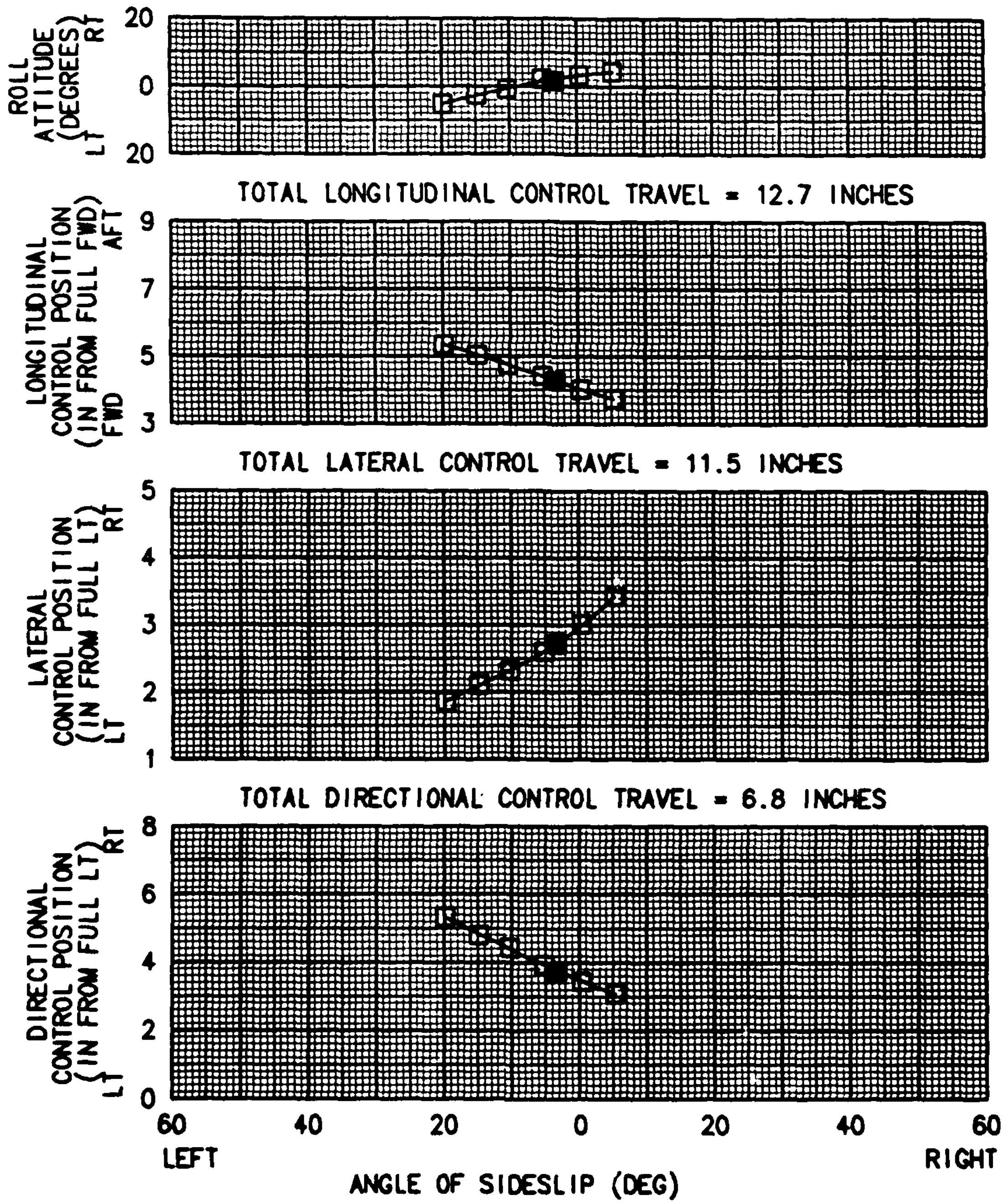


FIGURE E-74

STATIC LATERAL-DIRECTIONAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	AVG CG LOCATION (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3220	100.3(MID)	4.2(RT)	8200	21.5	477	64

NOTES: 1. CONFIG 2, RT ASYMM. LOADING
2. TRIM FLIGHT CONDITION: 59 PSI CLIMB
3. SHADED SYMBOL DENOTES TRIM

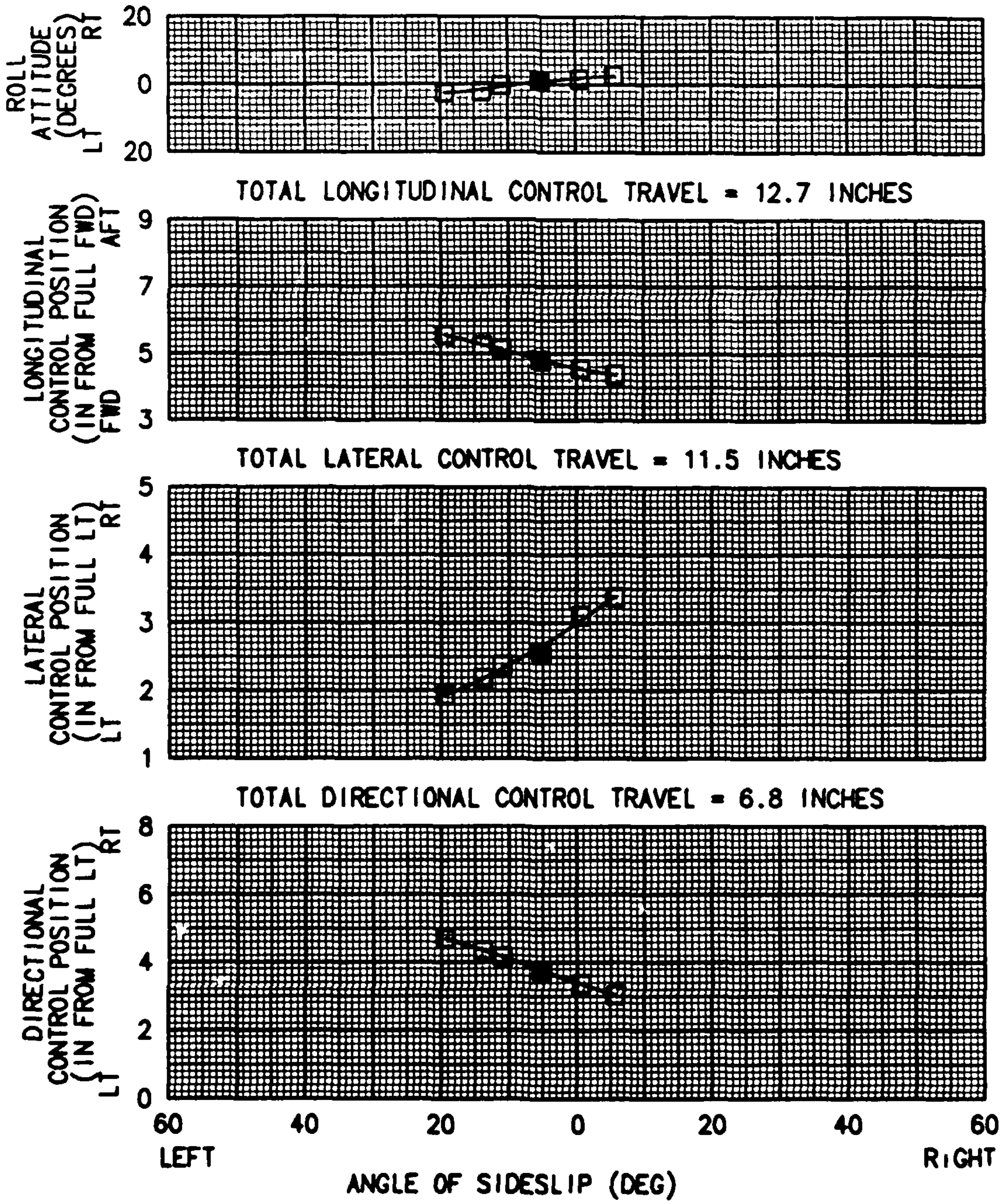


FIGURE E-75
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	(BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3560	101.2(MID)	4.9(RT)	7830	22.0	477	64

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS, RT ASYMM. LOADING
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

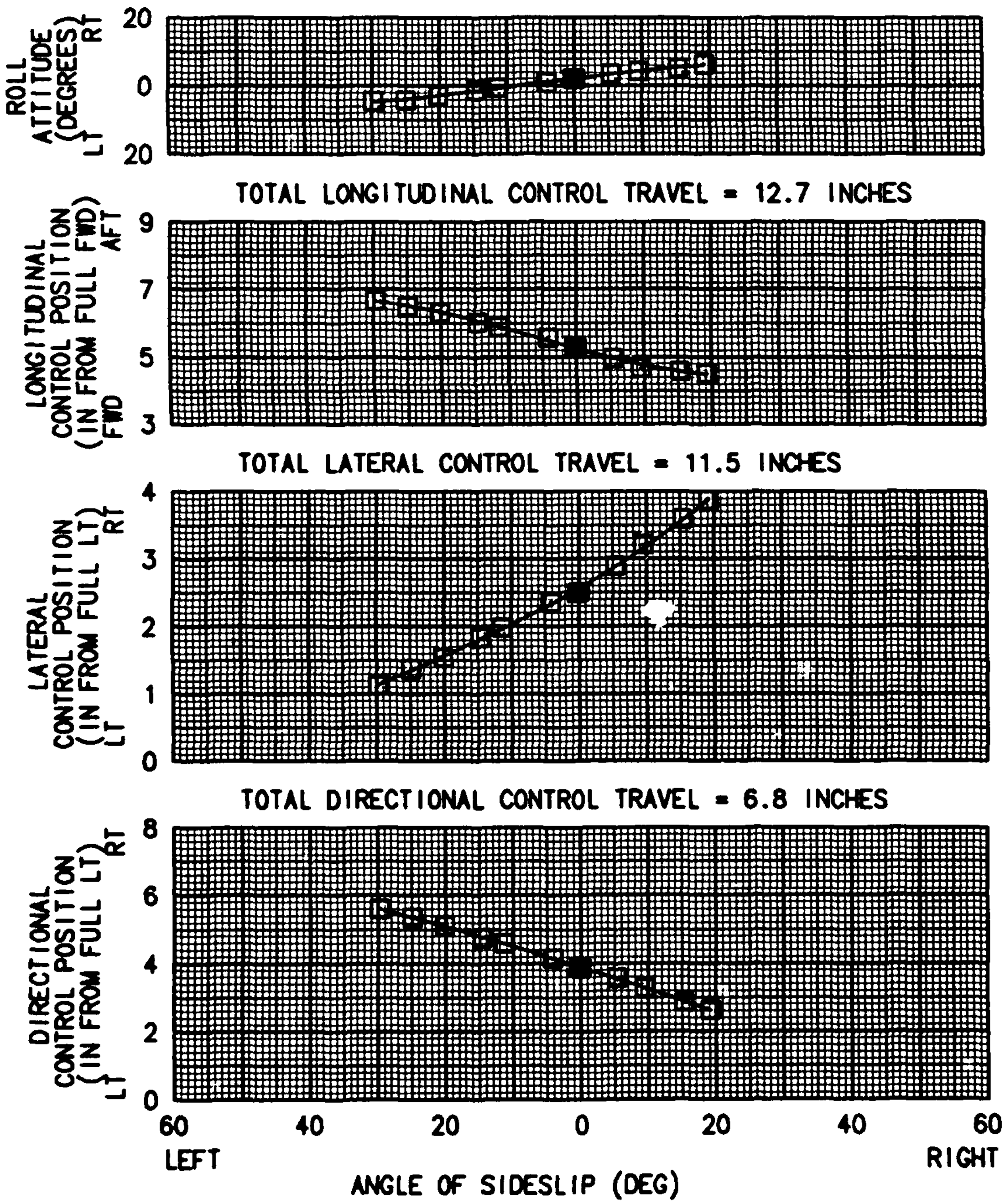


FIGURE E-76
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	(BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3520	101.3(MID)	4.9(RT)	7650	23.2	477	84

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS, RT ASYMM. LOADING
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

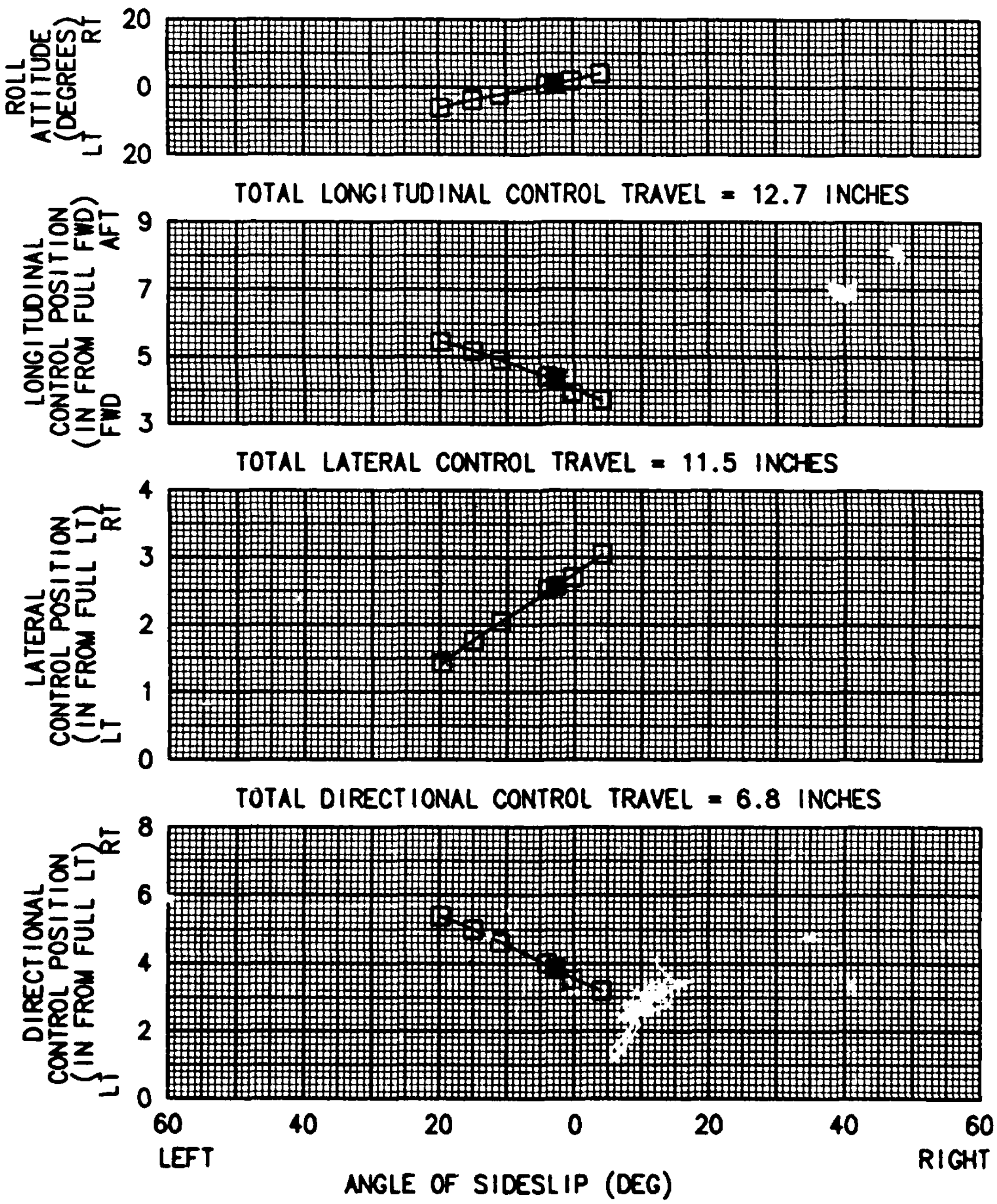


FIGURE E-77

STATIC LATERAL-DIRECTIONAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	(BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3380	101.4(MID)	4.9(RT)	8870	19.5	477	64

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS, RT ASYMM. LOADING
2. TRIM FLIGHT CONDITION: 59 PSI CLIMB
3. SHADED SYMBOL DENOTES TRIM

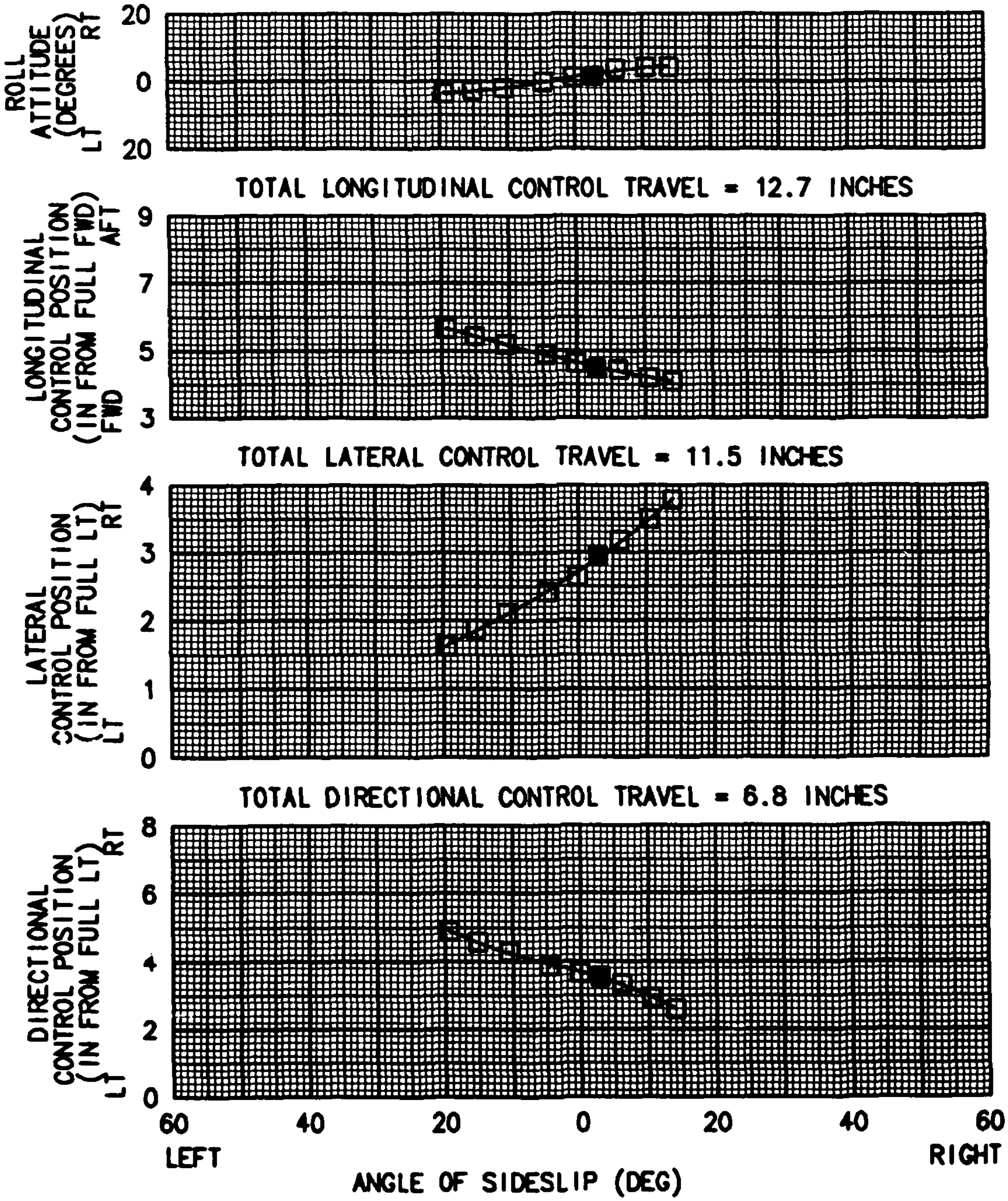


FIGURE E-78
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	(BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3340	100.4(MID)	4.9(RT)	7210	22.0	477	63

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS, RT ASYMM. LOADING
2. TRIM FLIGHT CONDITION: 1000 FPM DESCENT
3. SHADED SYMBOL DENOTES TRIM

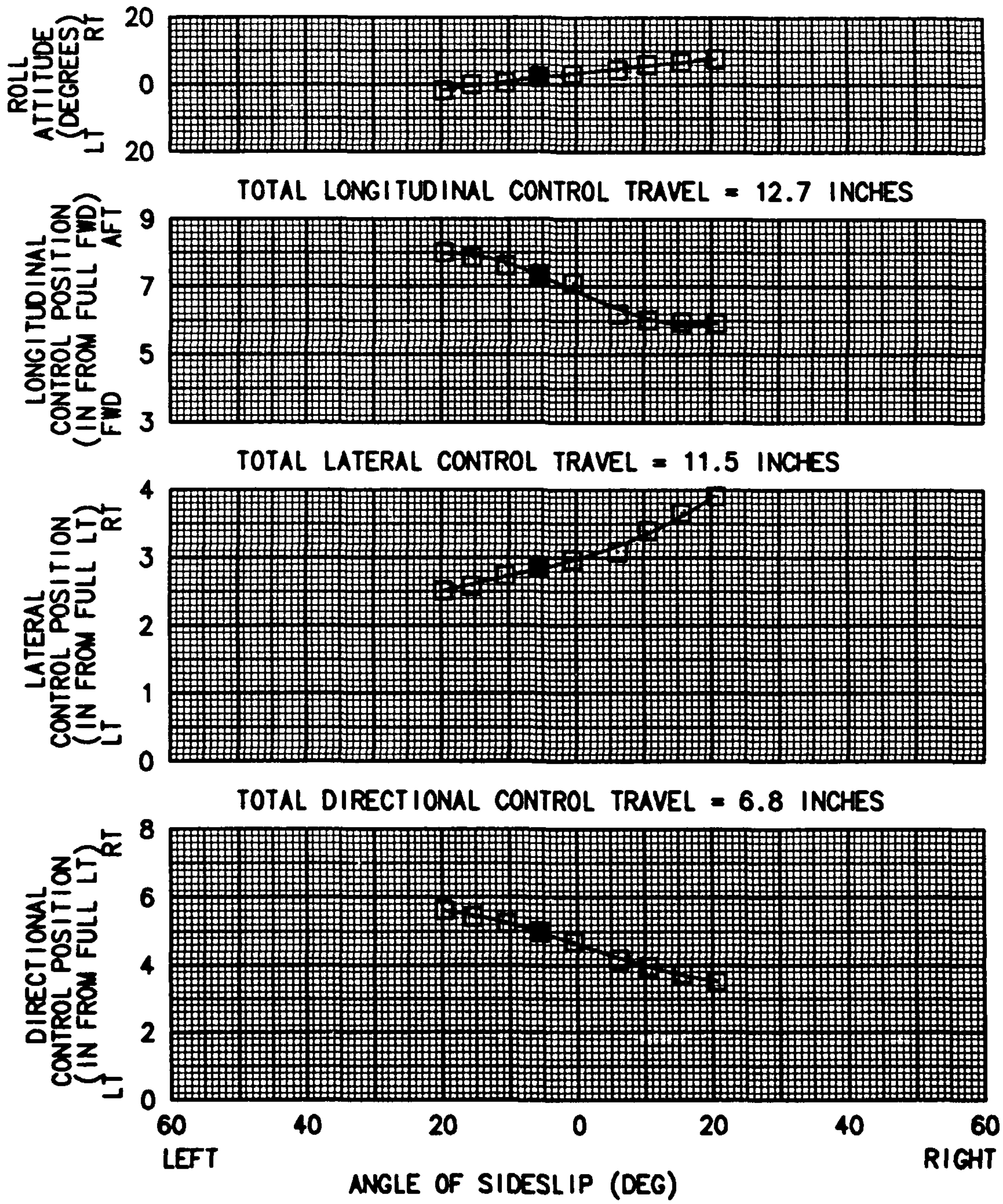


FIGURE E-79
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3410	100.8(MID)	5340	20.3	477	64

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

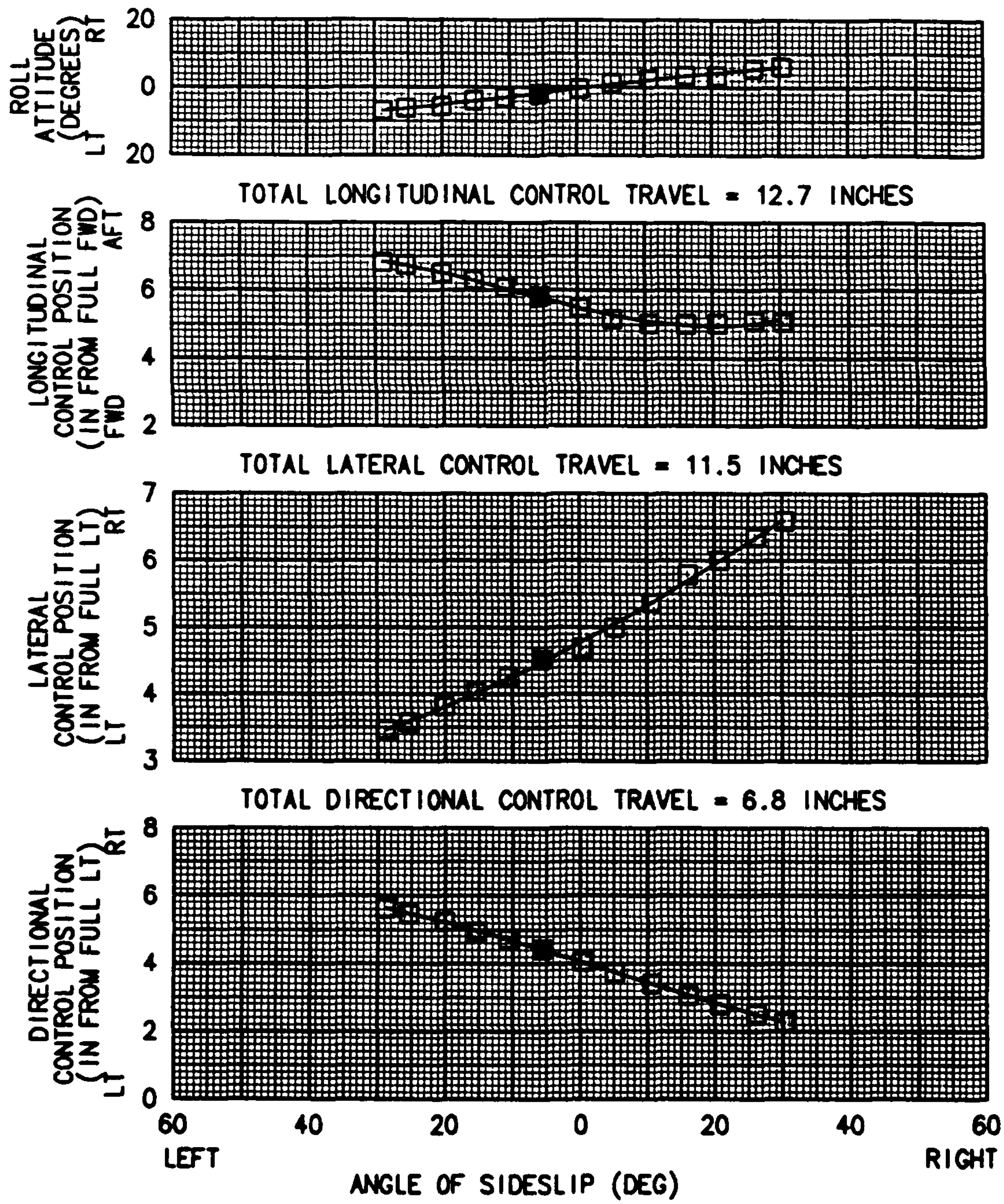


FIGURE E-80

STATIC LATERAL-DIRECTIONAL STABILITY

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3360	100.9(MID)	5480	21.5	477	84

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

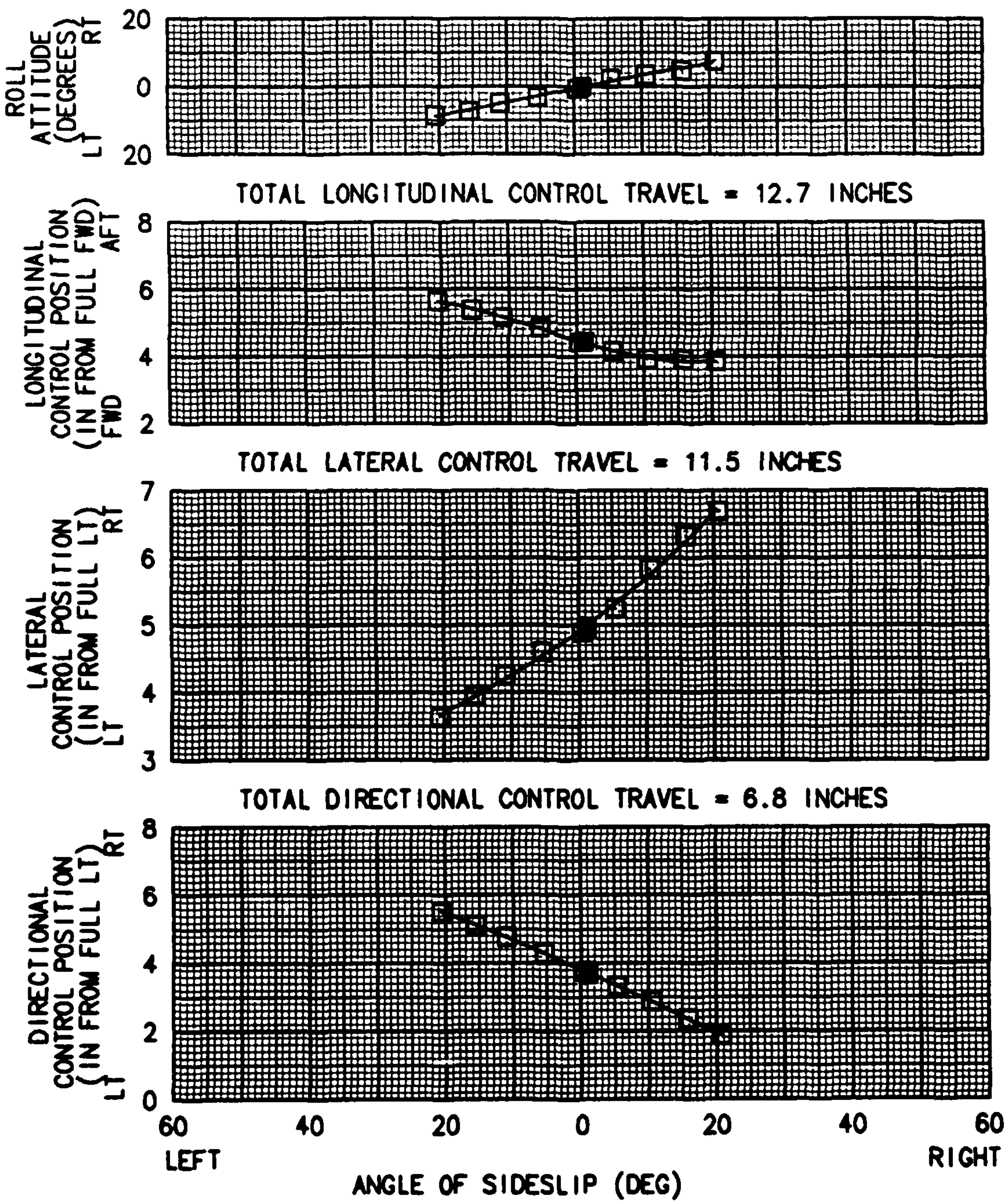


FIGURE E-81
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3300	100.9(MID)	5740	21.0	477	99

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT
3. SHADED SYMBOL DENOTES TRIM

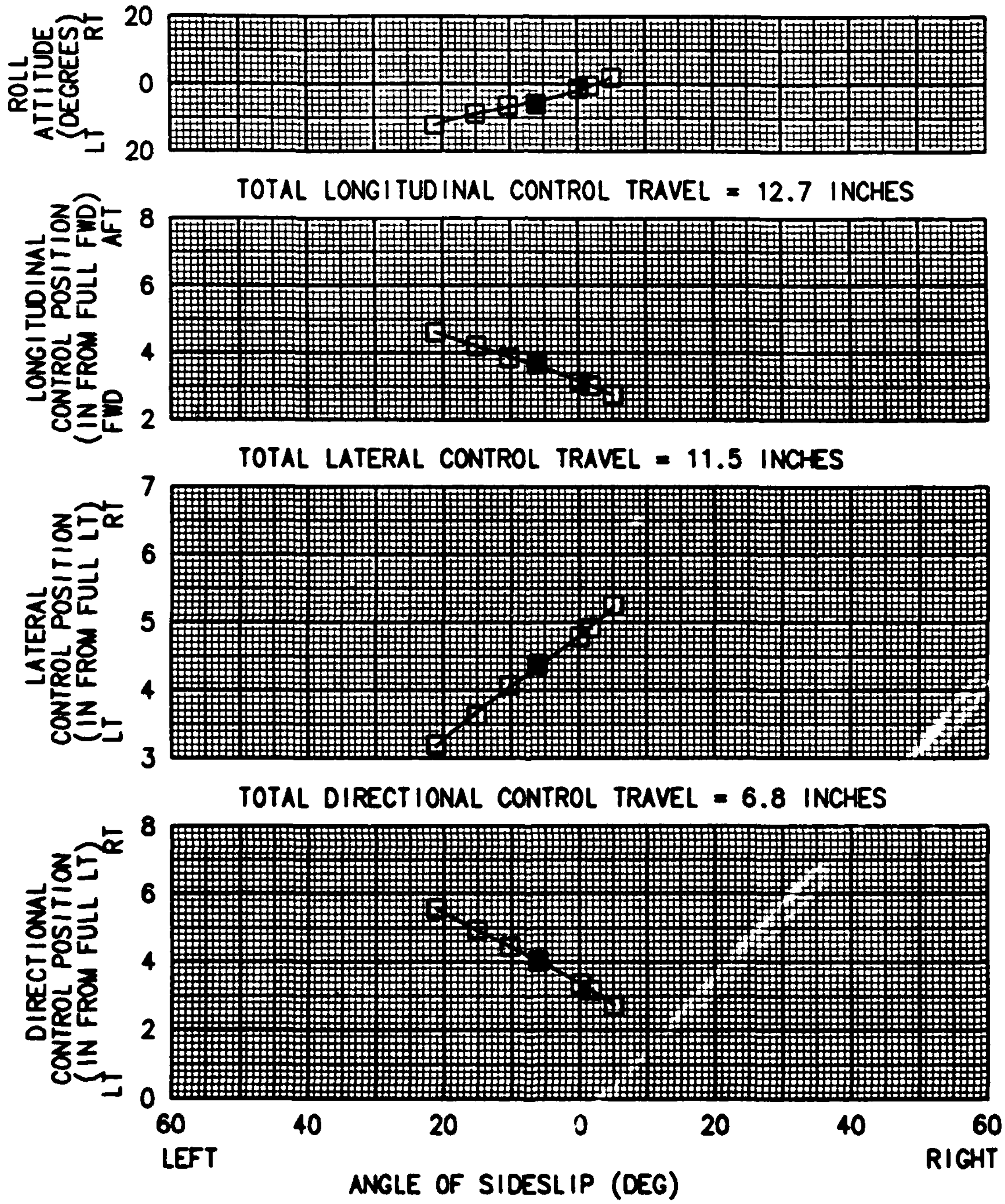


FIGURE E-82
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3600	101.6(MID)	7750	22.0	477	64

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: 59 PSI CLIMB
3. SHADED SYMBOL DENOTES TRIM

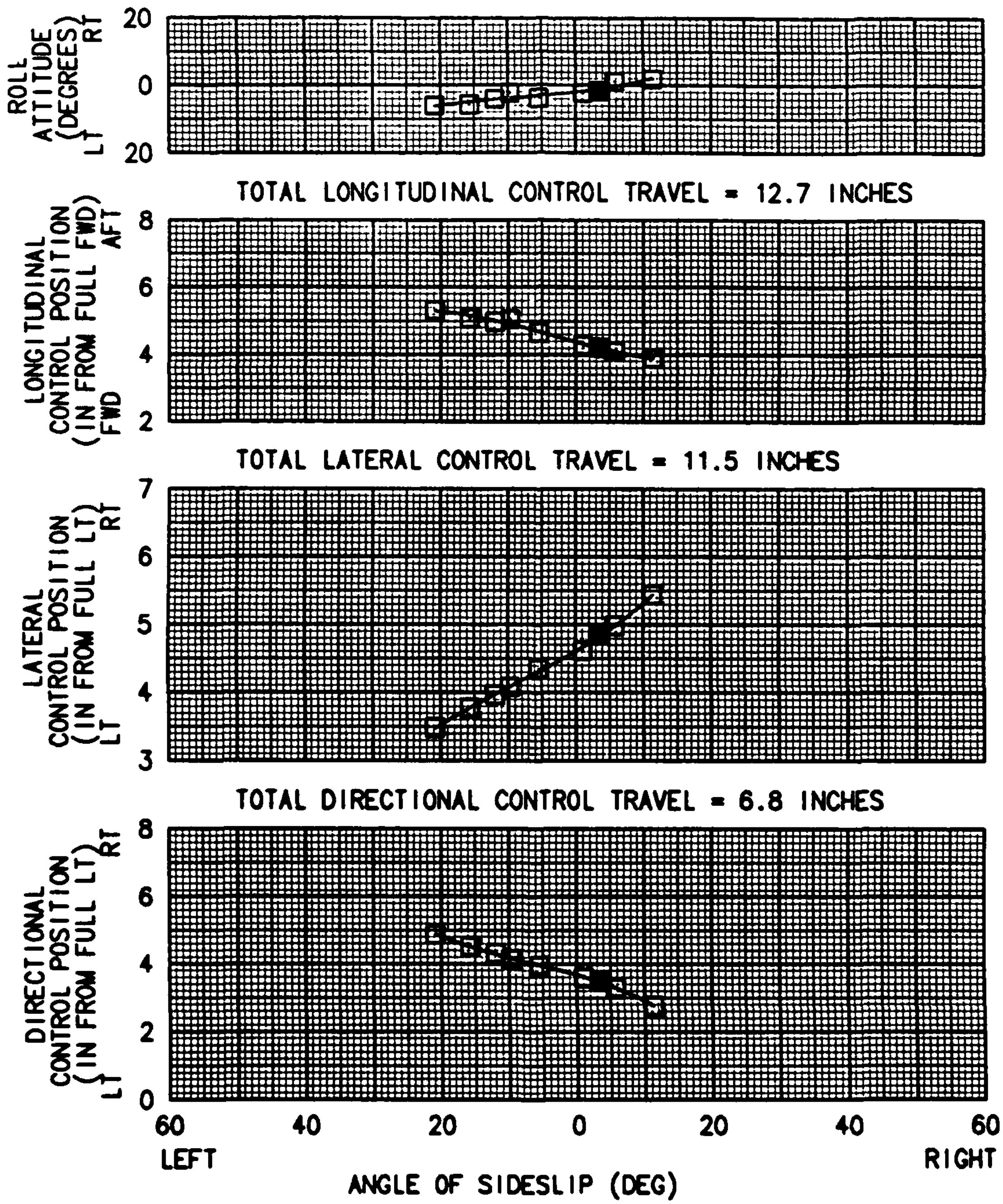


FIGURE E-83
STATIC LATERAL-DIRECTIONAL STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3580	101.6(MID)	7990	21.0	477	63

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHER
2. TRIM FLIGHT CONDITION: 1000 FPM DESCENT
3. SHADED SYMBOL DENOTES TRIM

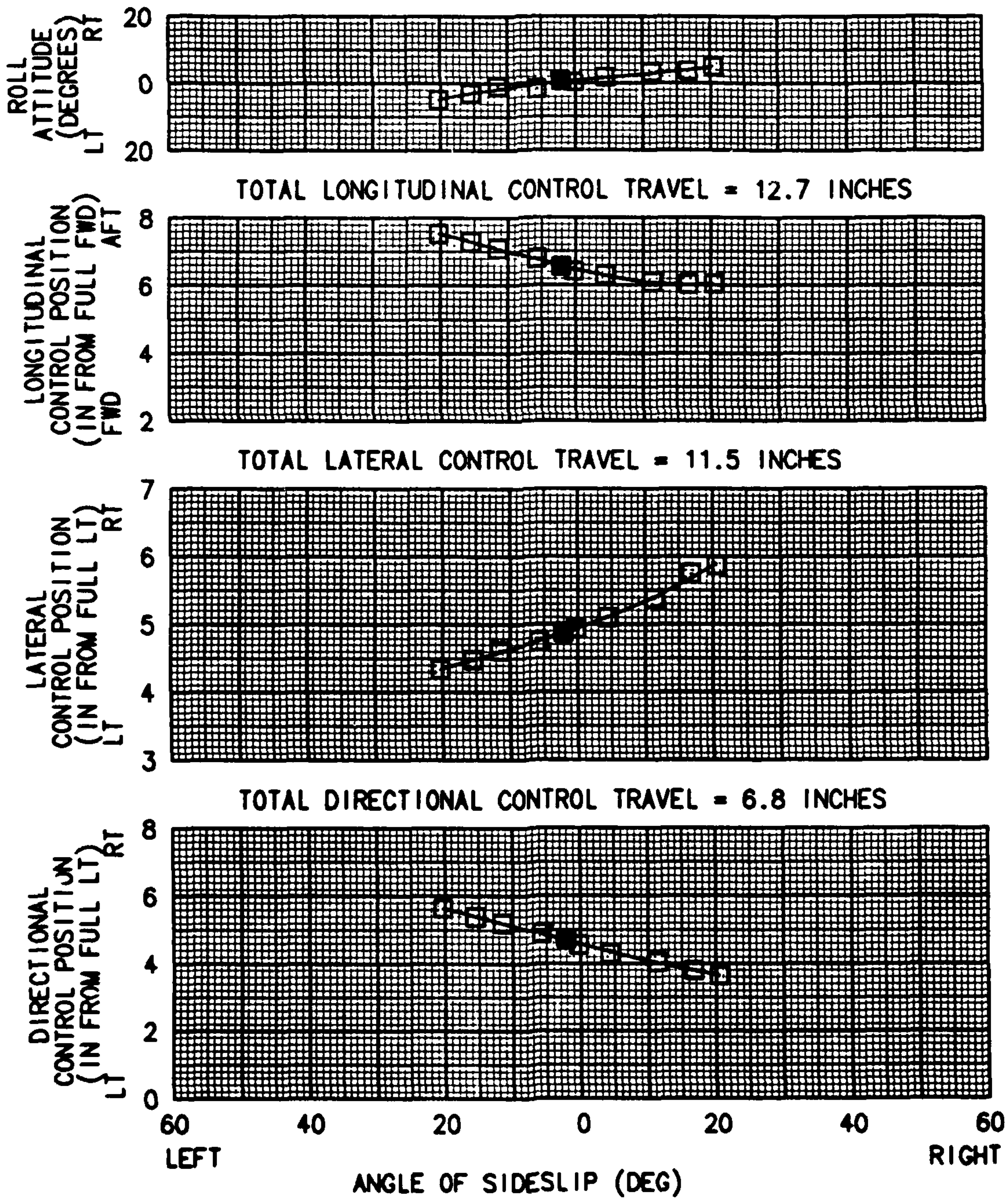


FIGURE E-84
MANEUVERING STABILITY
AH-6G USA S/N 84-24319

TRIM AIRSPEED = 64 KCAS

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
□	3020	101.4(MID)	7320	3.0	477	LEFT TURN
○	3020	101.4(MID)	7120	3.5	477	RIGHT TURN

NOTES: 1. EPS EMPTY CONFIGURATION
2. SHADED SYMBOL DENOTES TRIM

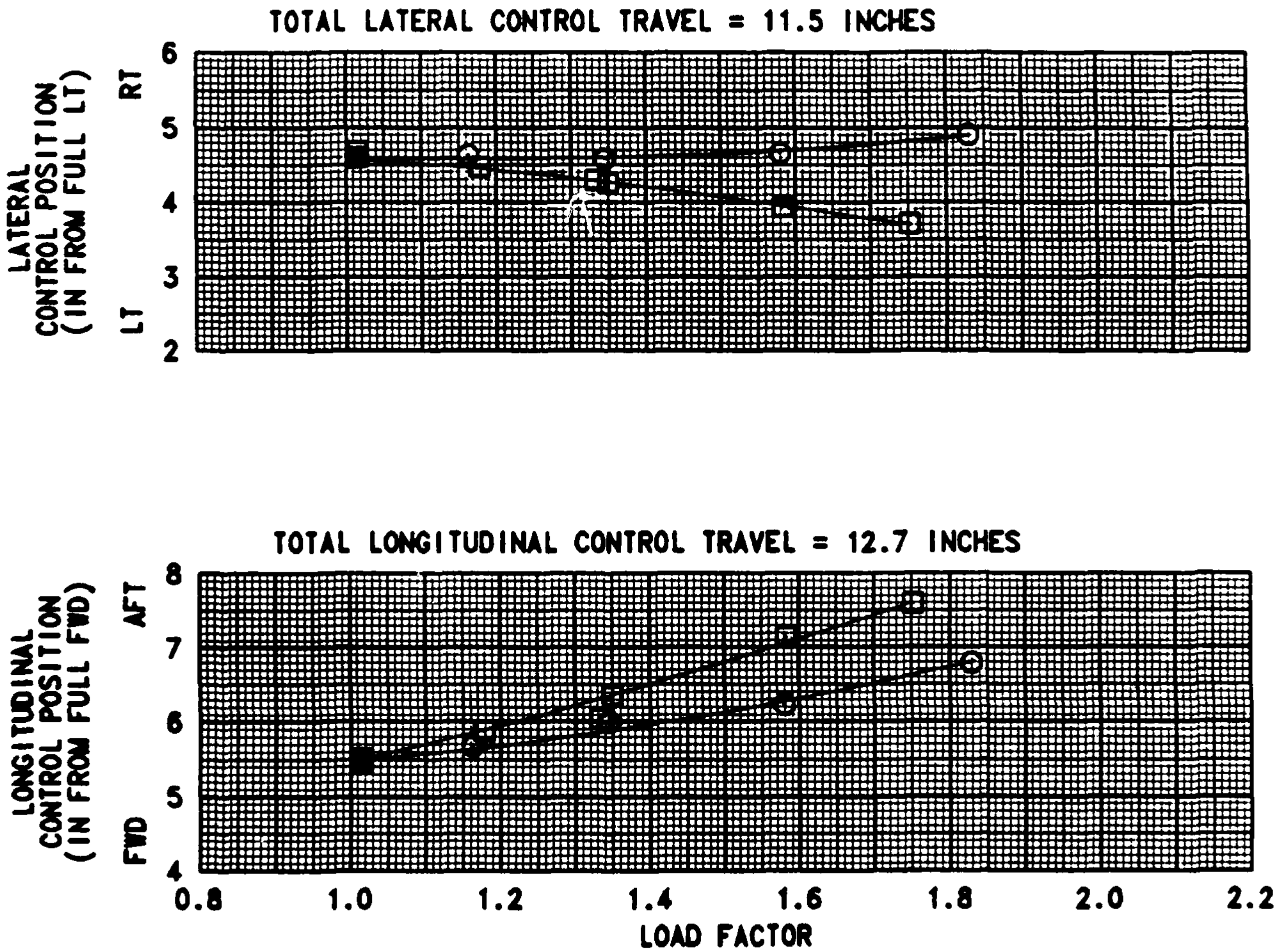
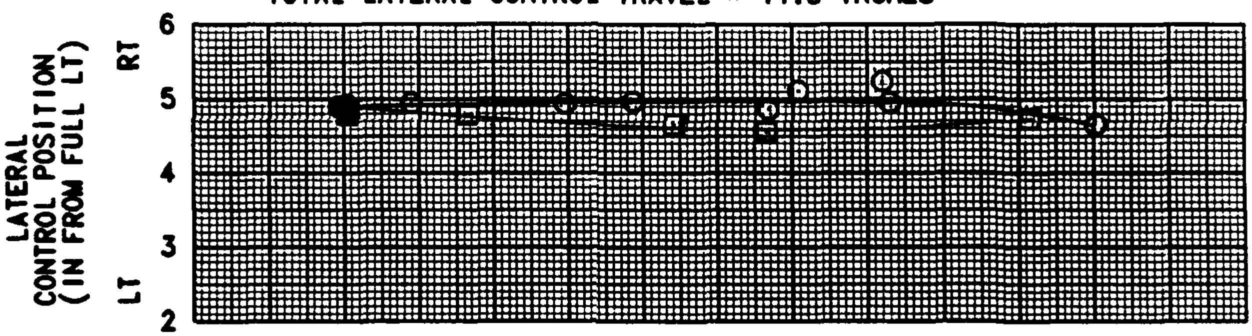


FIGURE E-85
MANEUVERING STABILITY
AH-6G USA S/N 84-24319

TRIM AIRSPEED = 83 KCAS

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
⊡	2960	1[illegible].5(MID)	7040	3.5	477	LEFT TURN
⊙	2920	101.4(MID)	7240	3.5	477	RIGHT TURN

NOTES: 1. EPS EMPTY CONFIGURATION
2. SHADED SYMBOL DENOTES TRIM



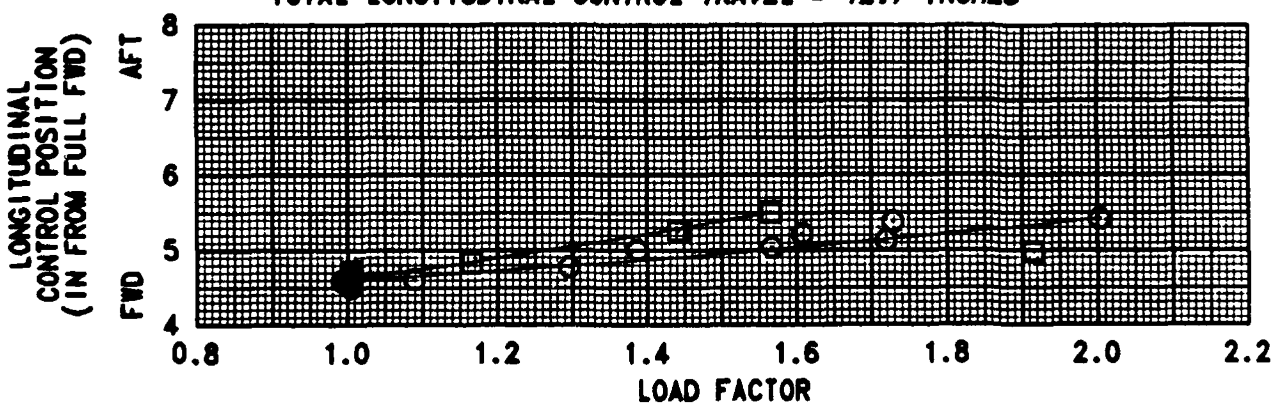


FIGURE E-86
MANEUVERING STABILITY
AH-6G USA S/N 84-24319

TRIM AIRSPEED = 102 KCAS

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
□	2880	101.5(MID)	7620	4.0	477	LEFT TURN
⊙	2860	101.6(MID)	8300	2.0	477	RIGHT TURN

NOTES: 1. EPS EMPTY CONFIGURATION
2. SHADED SYMBOL DENOTES TRIM

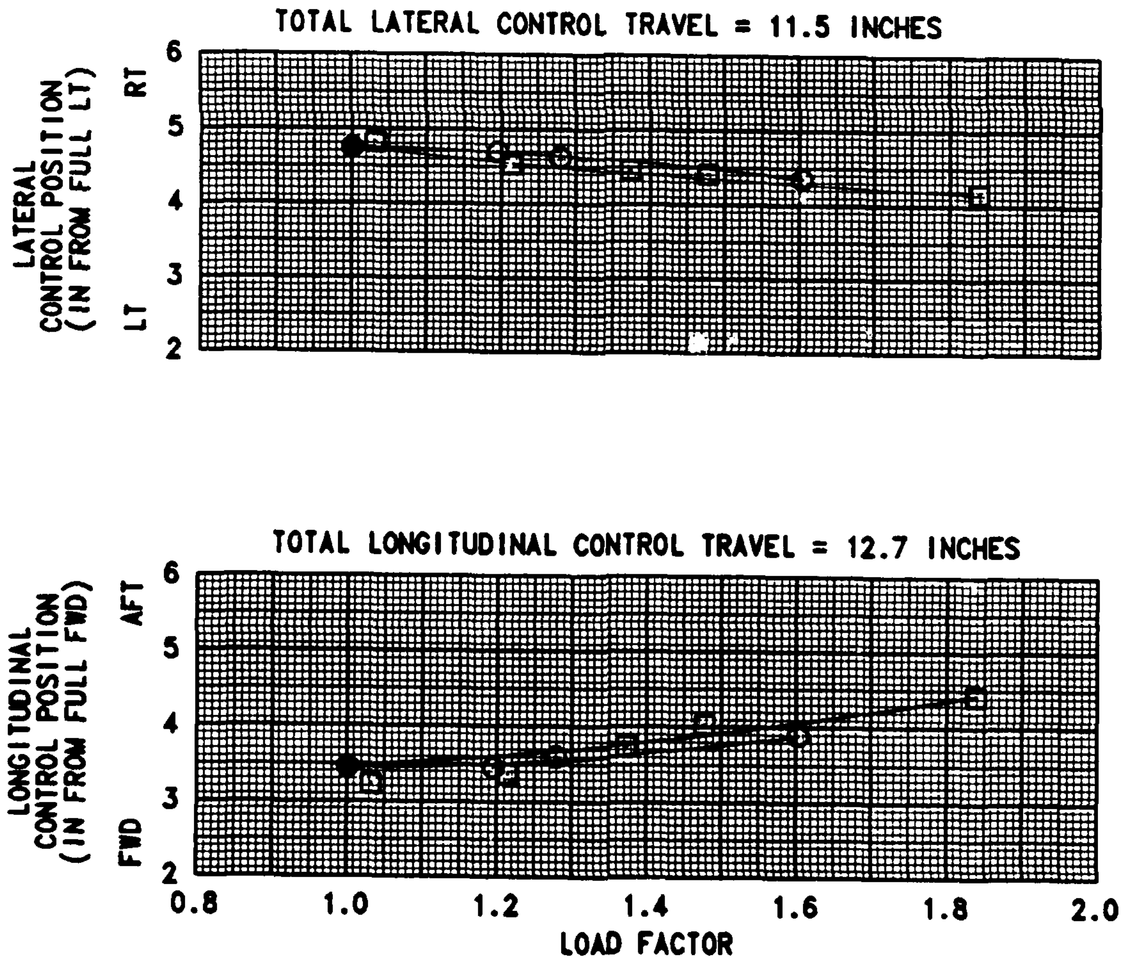


FIGURE E-87
MANEUVERING STABILITY
AH-6G USA S/N 84-24319

TRIM AIRSPEED = 65 KCAS

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
□	3700	100.4(MID)	6190	10.0	477	LEFT TURN
⊙	3660	100.4(MID)	5990	10.5	477	RIGHT TURN

NOTES: 1. EPS FULL CONFIGURATION
2. SHADED SYMBOL DENOTES TRIM

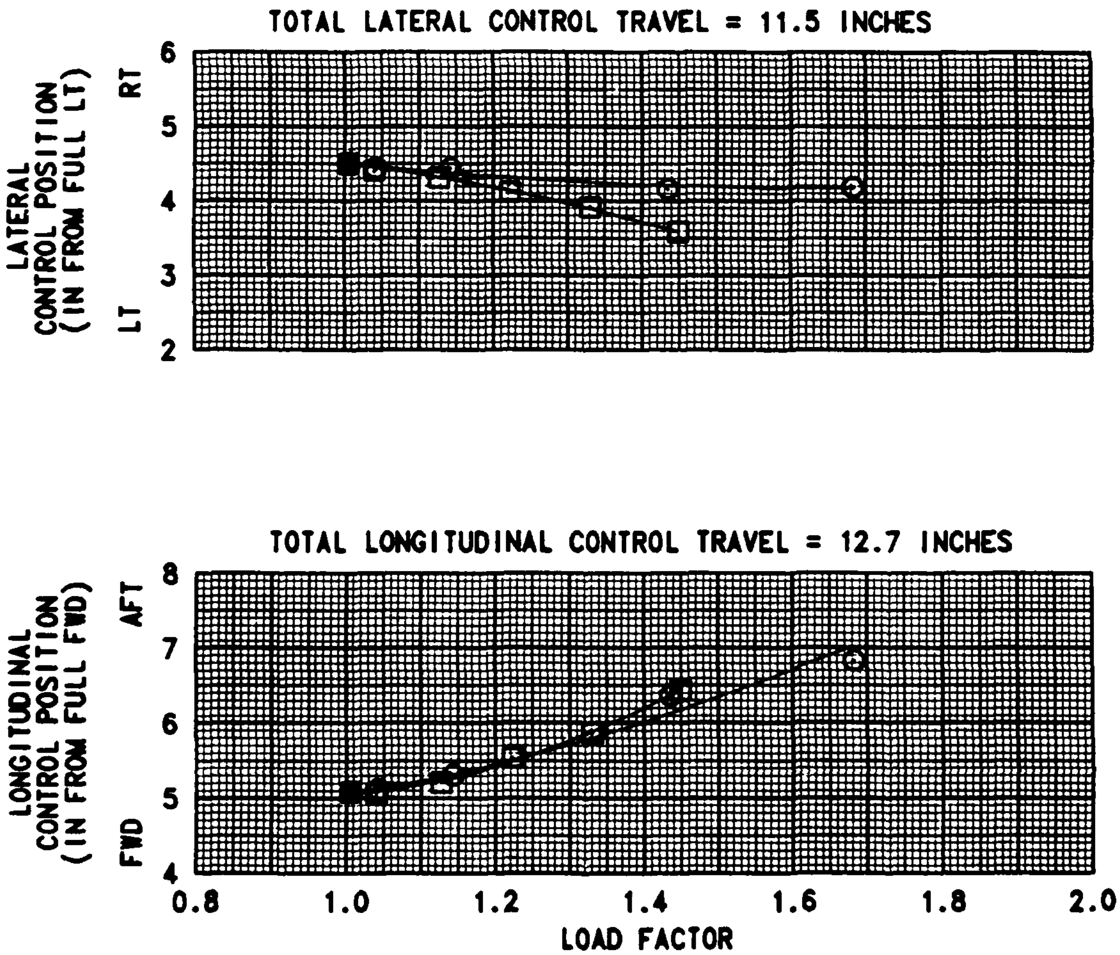


FIGURE E-88
MANEUVERING STABILITY
AH-6G USA S/N 84-24319

TRIM AIRSPEED = 64 KCAS

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
□	3740	100.3(MID)	5610	12.0	477	PULL-UP
○	3720	100.3(MID)	5470	12.0	477	PUSHOVER

NOTES: 1. EPS FULL CONFIGURATION
2. SHADED SYMBOL DENOTES TRIM

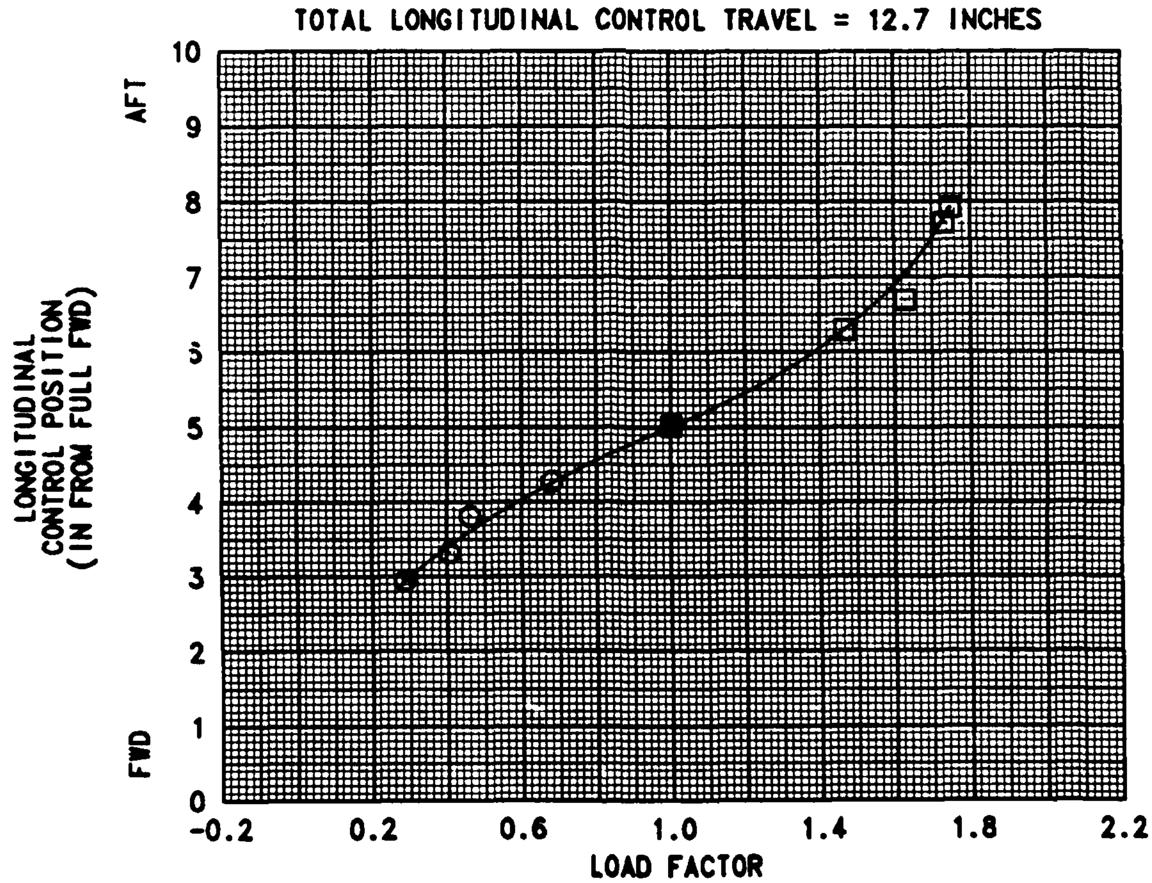


FIGURE E-89
MANEUVERING STABILITY
AH-6G USA S/N 84-24319

TRIM AIRSPEED = 64 KCAS

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
⊡	3700	100.2(MID)	7180	22.0	477	LEFT TURN
⊙	3660	100.2(MID)	7300	22.0	477	RIGHT TURN

NOTES: 1. PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS
2. SHADED SYMBOL DENOTES TRIM

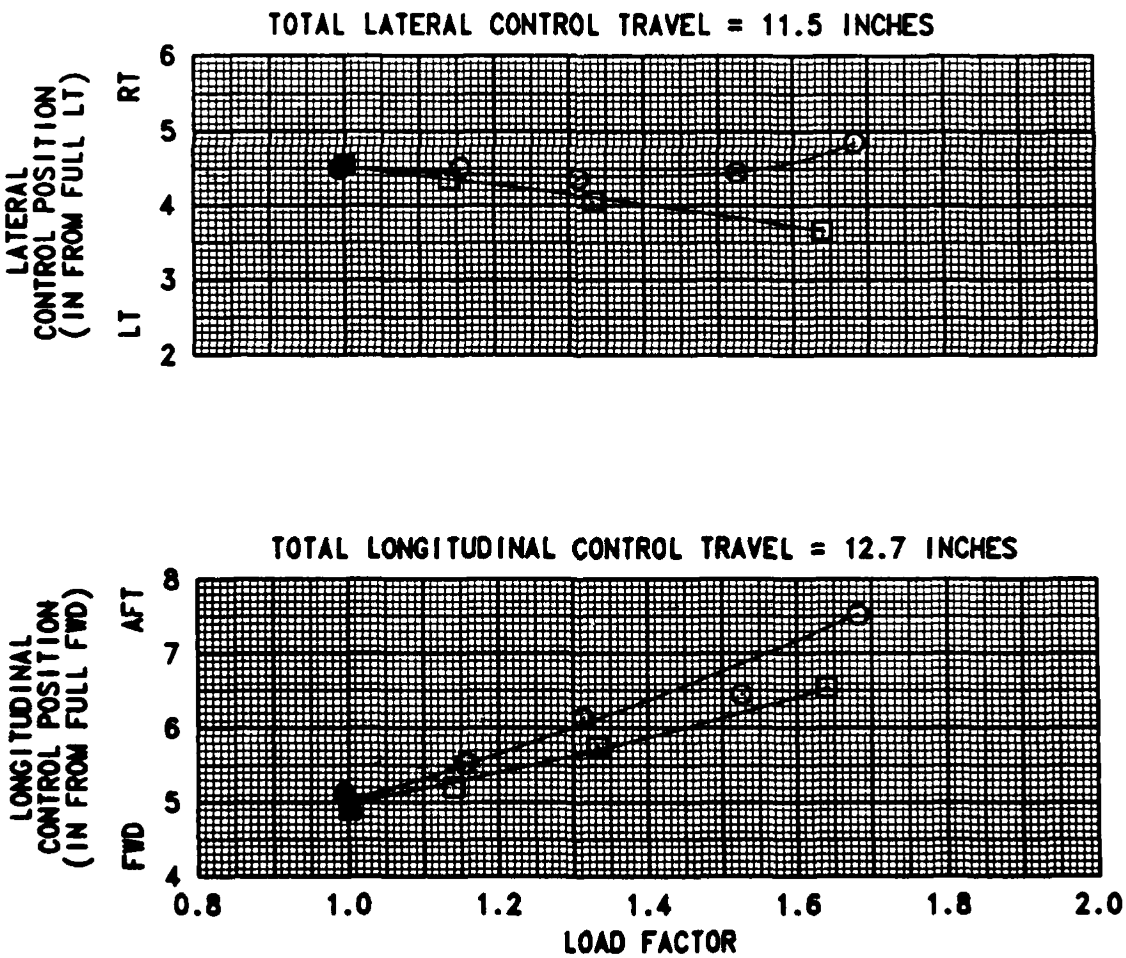


FIGURE E-90
MANEUVERING STABILITY
AH-6G   USA S/N 84-24319

TRIM AIRSPEED = 64 KCAS

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
□	3840	100.3(MID)	6420	27.0	477	PULL-UP
○	3800	100.4(MID)	6270	27.0	477	PUSHOVER

NOTES: 1. PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS
2. SHADED SYMBOL DENOTES TRIM

TOTAL LONGITUDINAL CONTROL TRAVEL = 12.7 INCHES

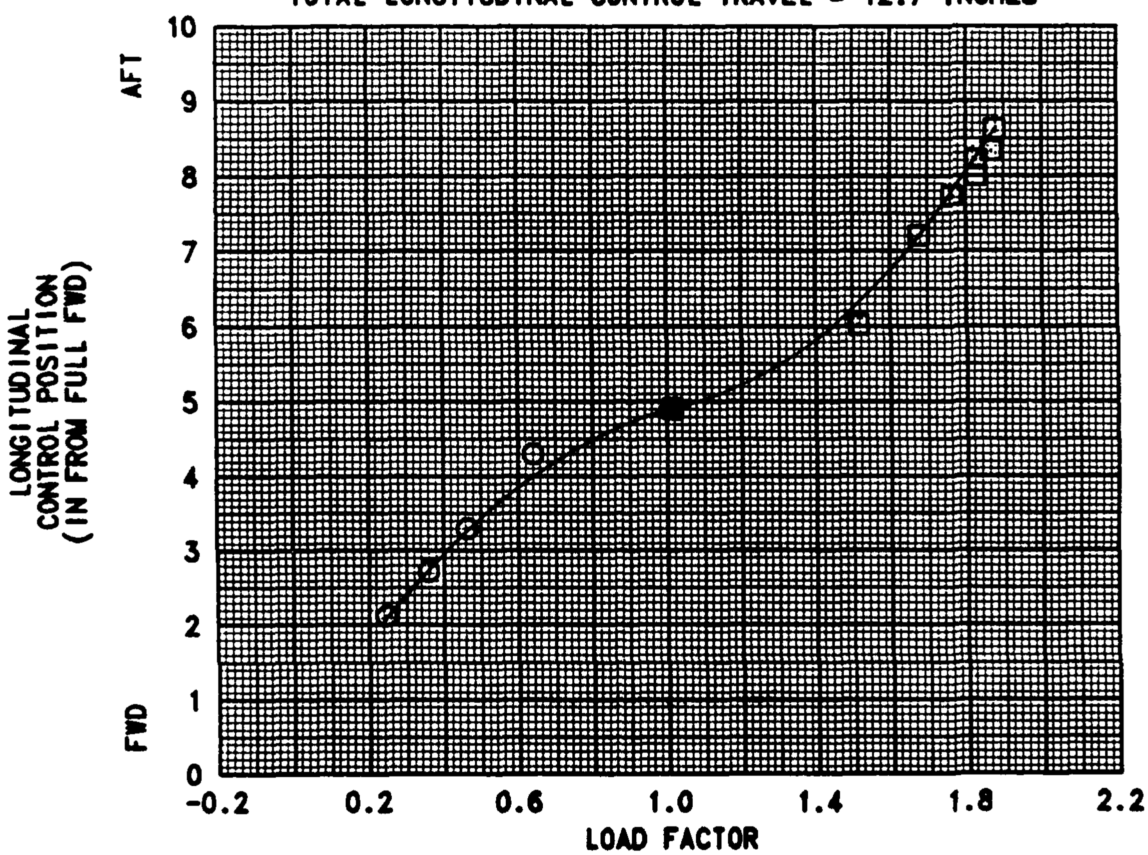


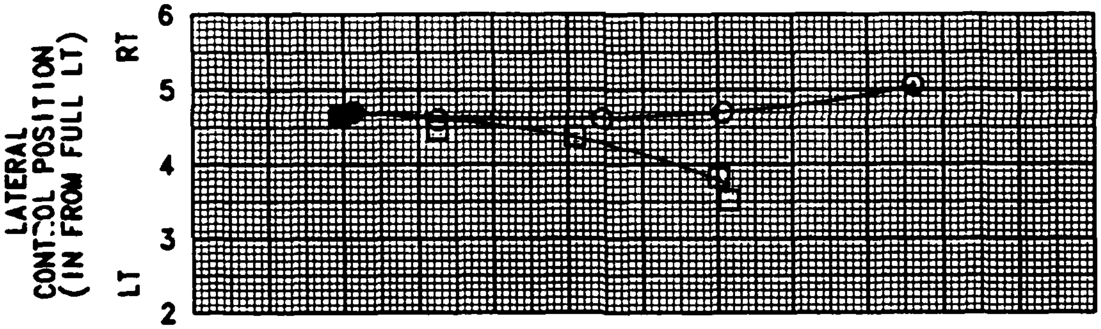
FIGURE E-91
MANEUVERING STABILITY
AH-6G USA S/N 84-24319

TRIM AIRSPEED = 64 KCAS

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
□	3260	100.9(MID)	7730	17.5	477	LEFT TURN
⊙	3240	101.0(MID)	7980	16.0	477	RIGHT TURN

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. SHADED SYMBOL DENOTES TRIM

TOTAL LATERAL CONTROL TRAVEL = 11.5 INCHES



TOTAL LONGITUDINAL CONTROL TRAVEL = 12.7 INCHES

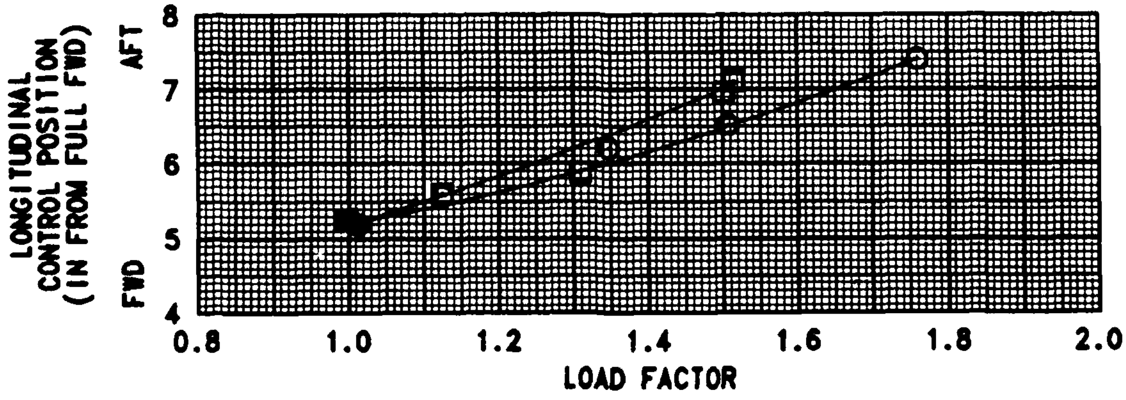


FIGURE E-92
MANEUVERING STABILITY
AH-6G USA S/N 84-24319

TRIM AIRSPEED = 67 KCAS

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
□	3540	101.7(MID)	6240	25.0	477	PULL-UP
○	3520	101.7(MID)	6100	25.0	477	PUSHOVER

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. SHADED SYMBOL DENOTES TRIM

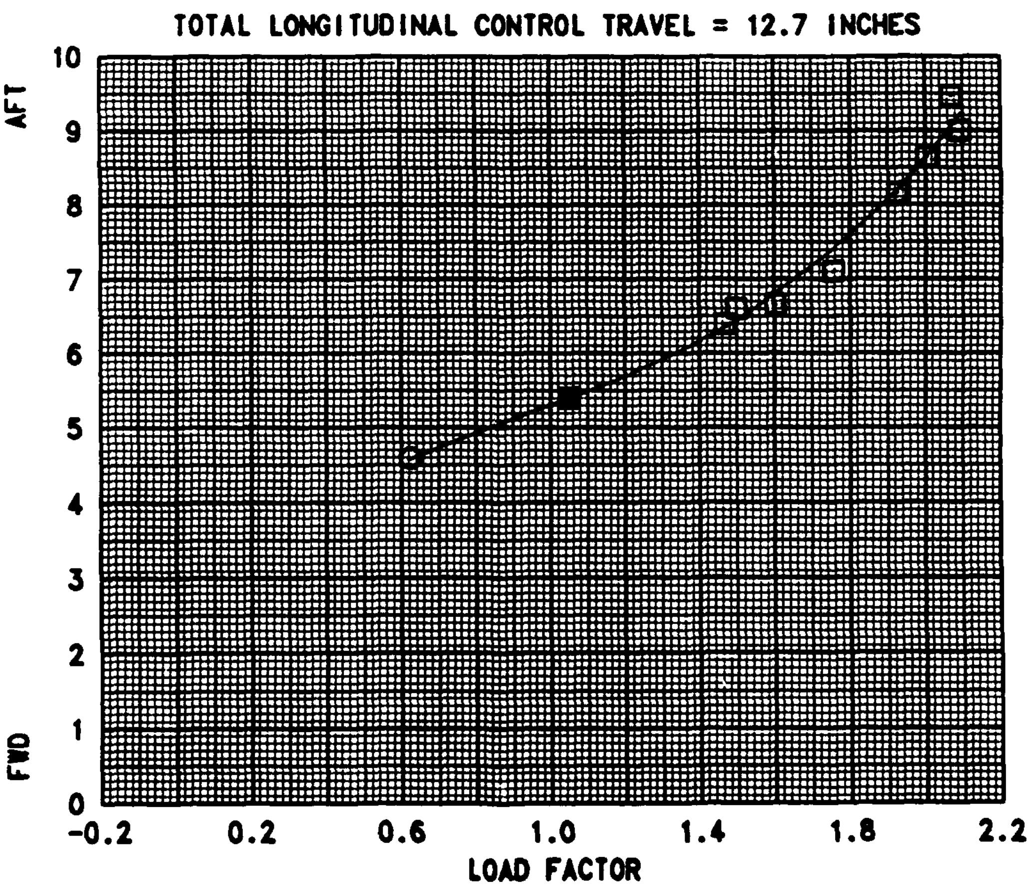


FIGURE E-93

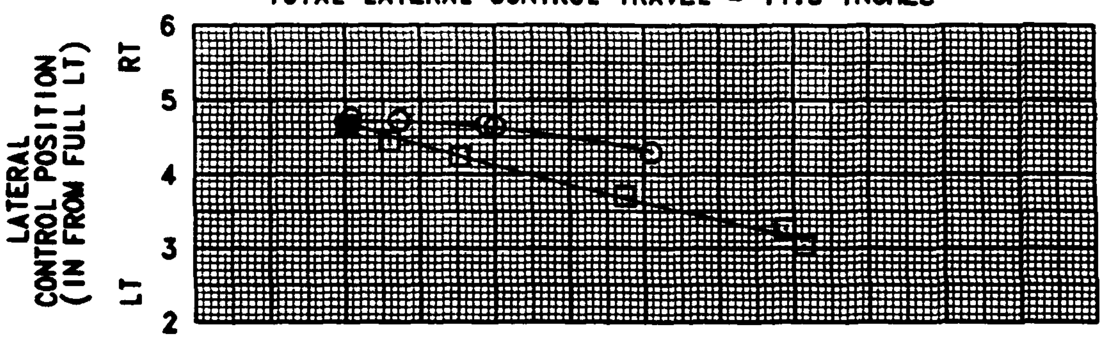
MANEUVERING STABILITY

AH-6G USA S/N 84-24319

TRIM AIRSPEED = 83 KCAS

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
□	3480	100.9(MID)	8000	25.0	477	LEFT TURN
○	3490	101.0(MID)	8480	22.0	477	RIGHT TURN

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. SHADED SYMBOL DENOTES TRIM



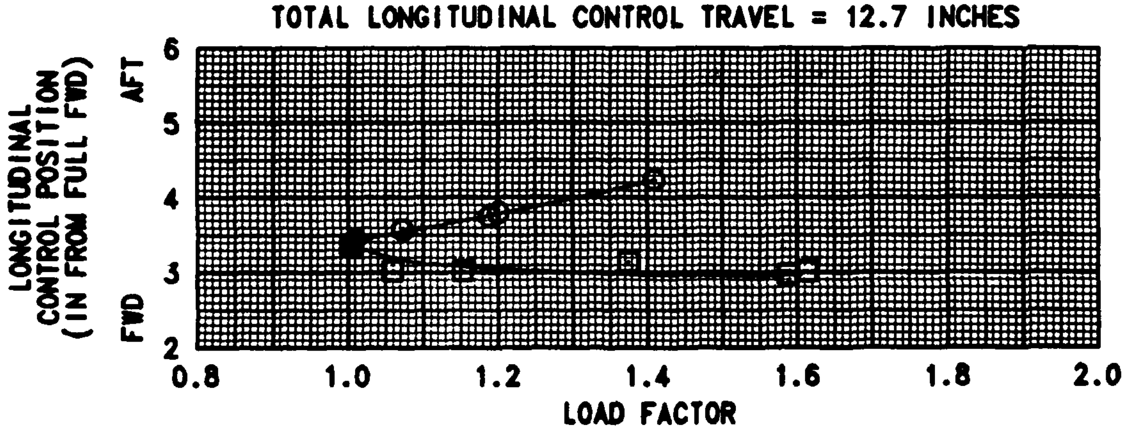


FIGURE E-94
MANEUVERING STABILITY
AH-6G USA S/N 84-24319

TRIM AIRSPEED = 84 KCAS

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
⊡	3370	101.8(MID)	7500	25.0	477	PULL-UP
⊙	3300	101.8(MID)	7510	26.5	477	PUSHOVER

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. SHADED SYMBOL DENOTES TRIM

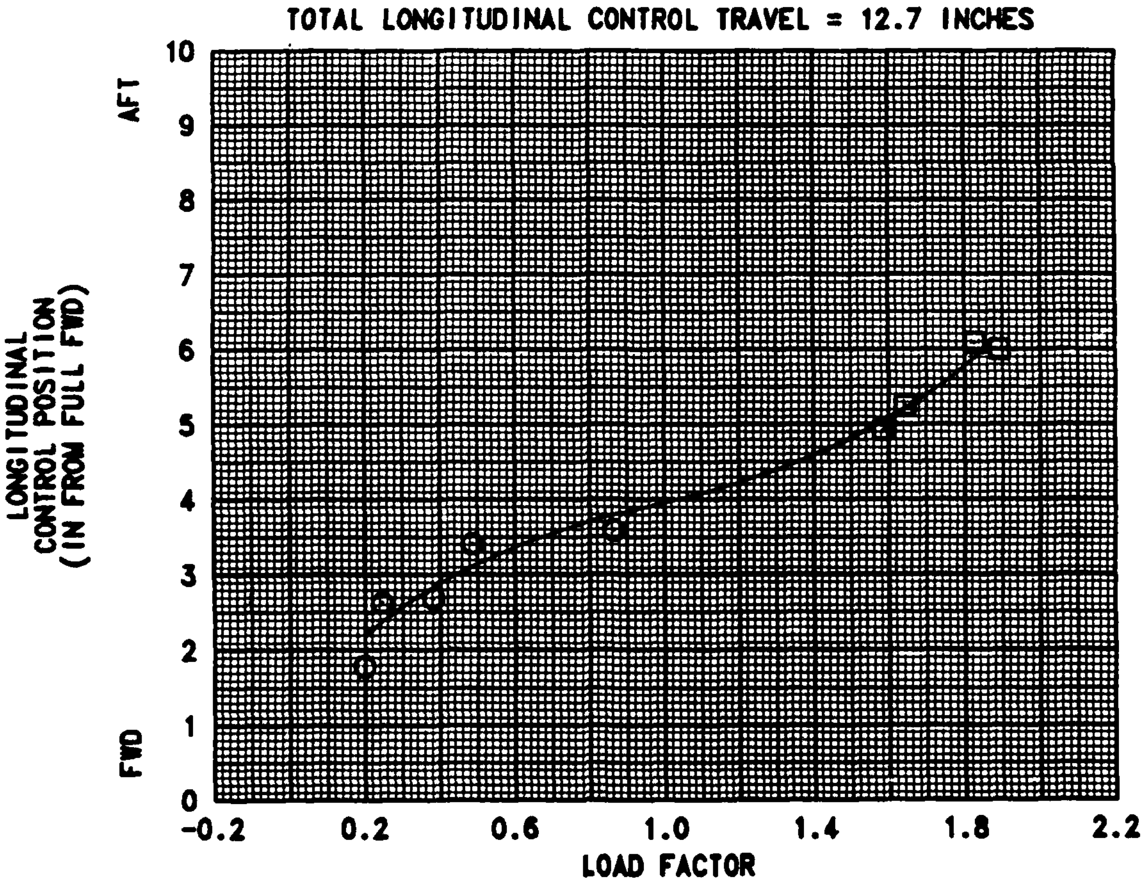


FIGURE E-96
MANEUVERING STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)	FLIGHT CONDITION	CONFIGURATION
2980	101.4(MID)	7750	4.0	477	84	DESCENDING LEFT TURN	EPS EMPTY

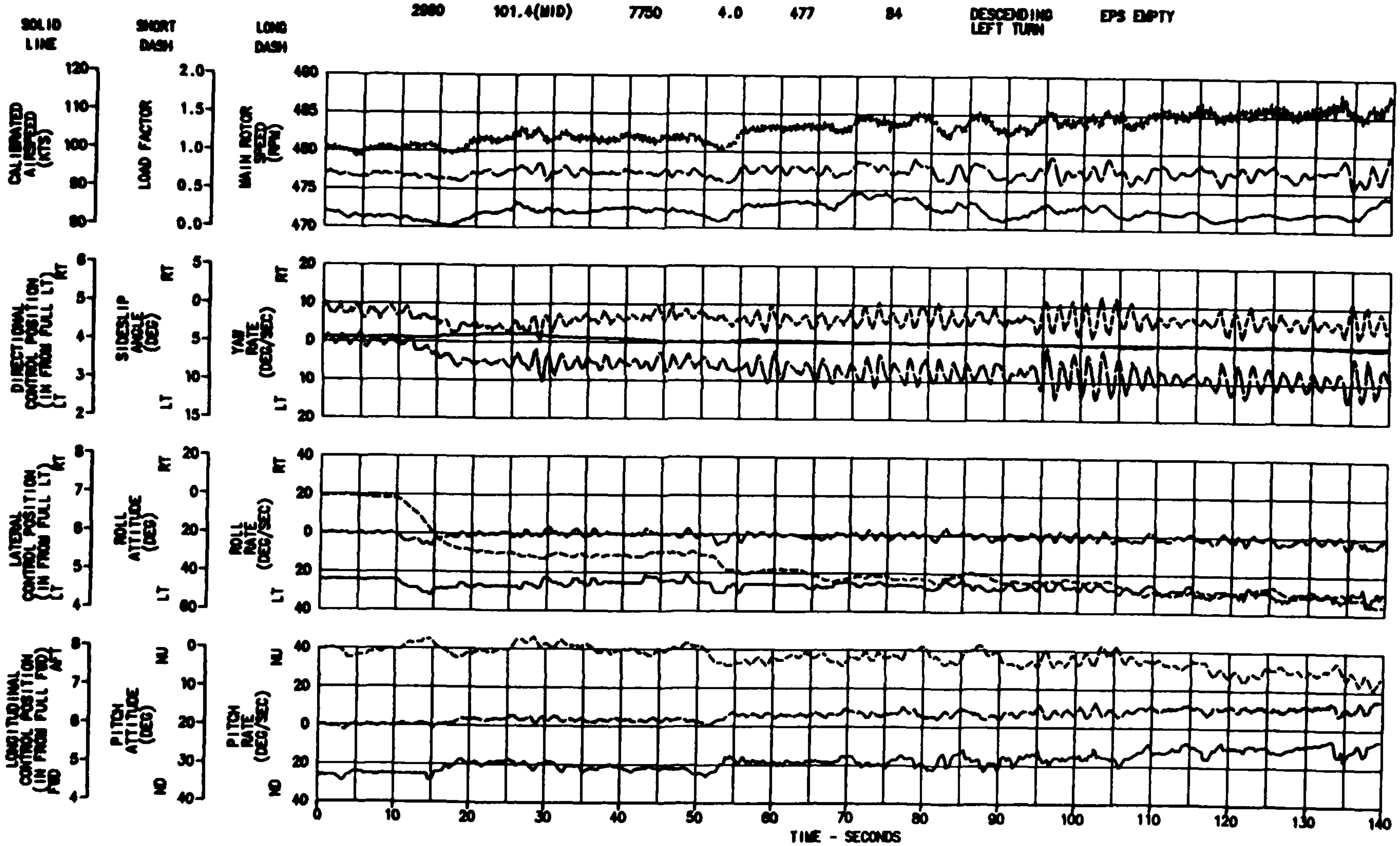


FIGURE E-96
MANEUVERING STABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)	FLIGHT CONDITION	CONFIGURATION
3510	101.0(MID)	8810	26.0	477	84	DESCENDING LEFT TURN	UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS

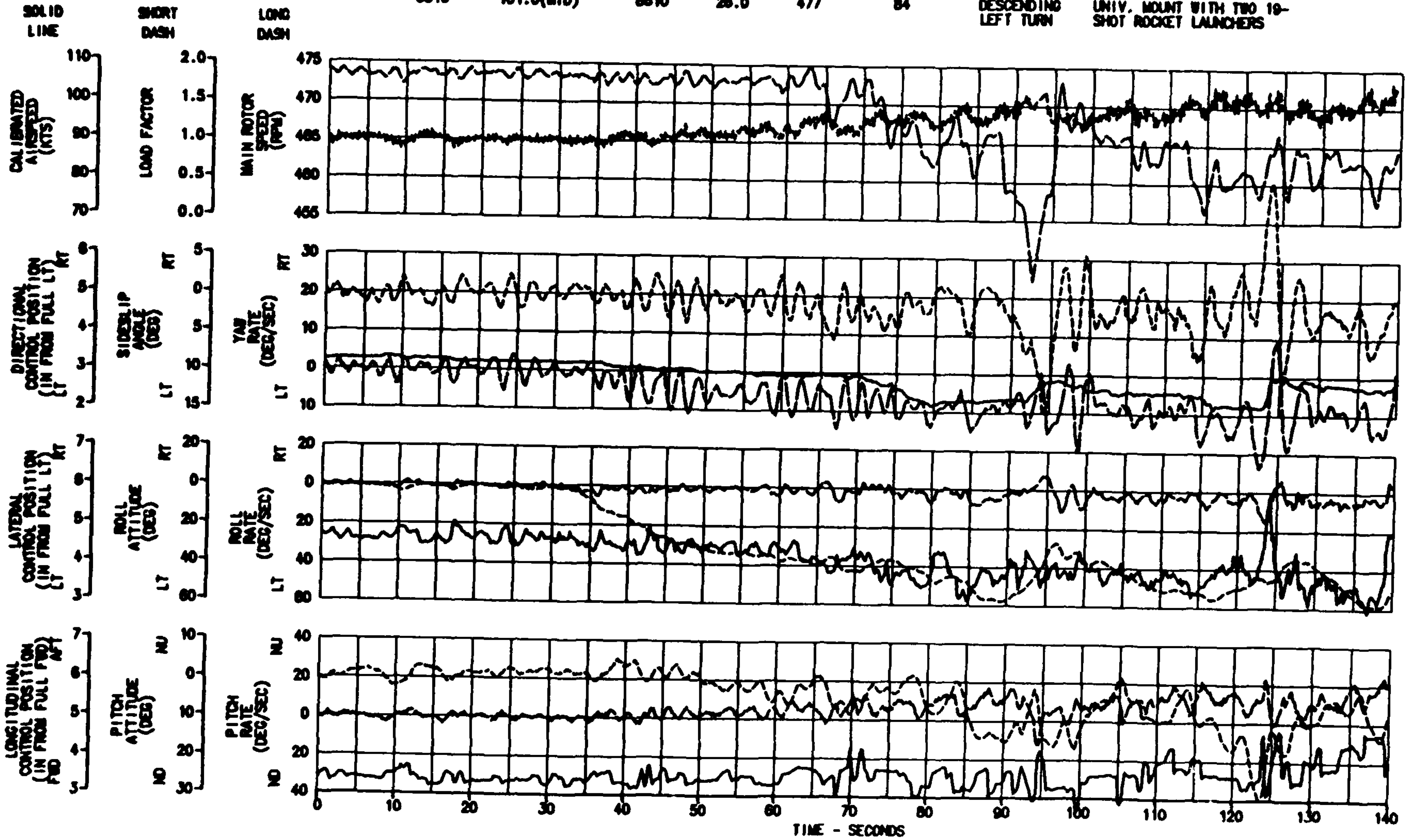
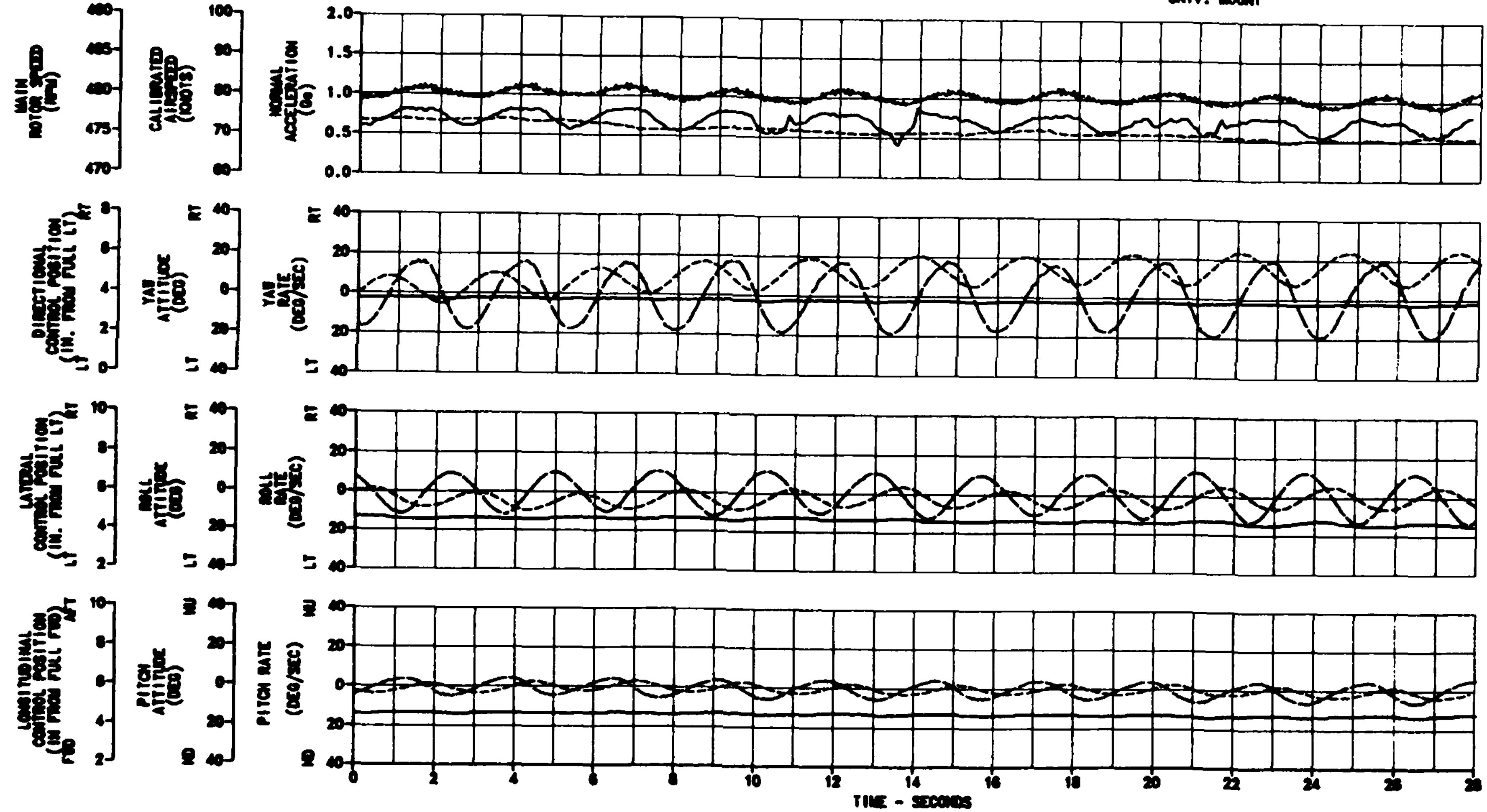


FIGURE E-87

UNCOMMANDED LATERAL-DIRECTIONAL OSCILLATION

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3420	100.7 (MID)	7600	6.0	477	73	19-SHOT ROCKET BOTH SIDES UNIV. MOUNT	LEVEL



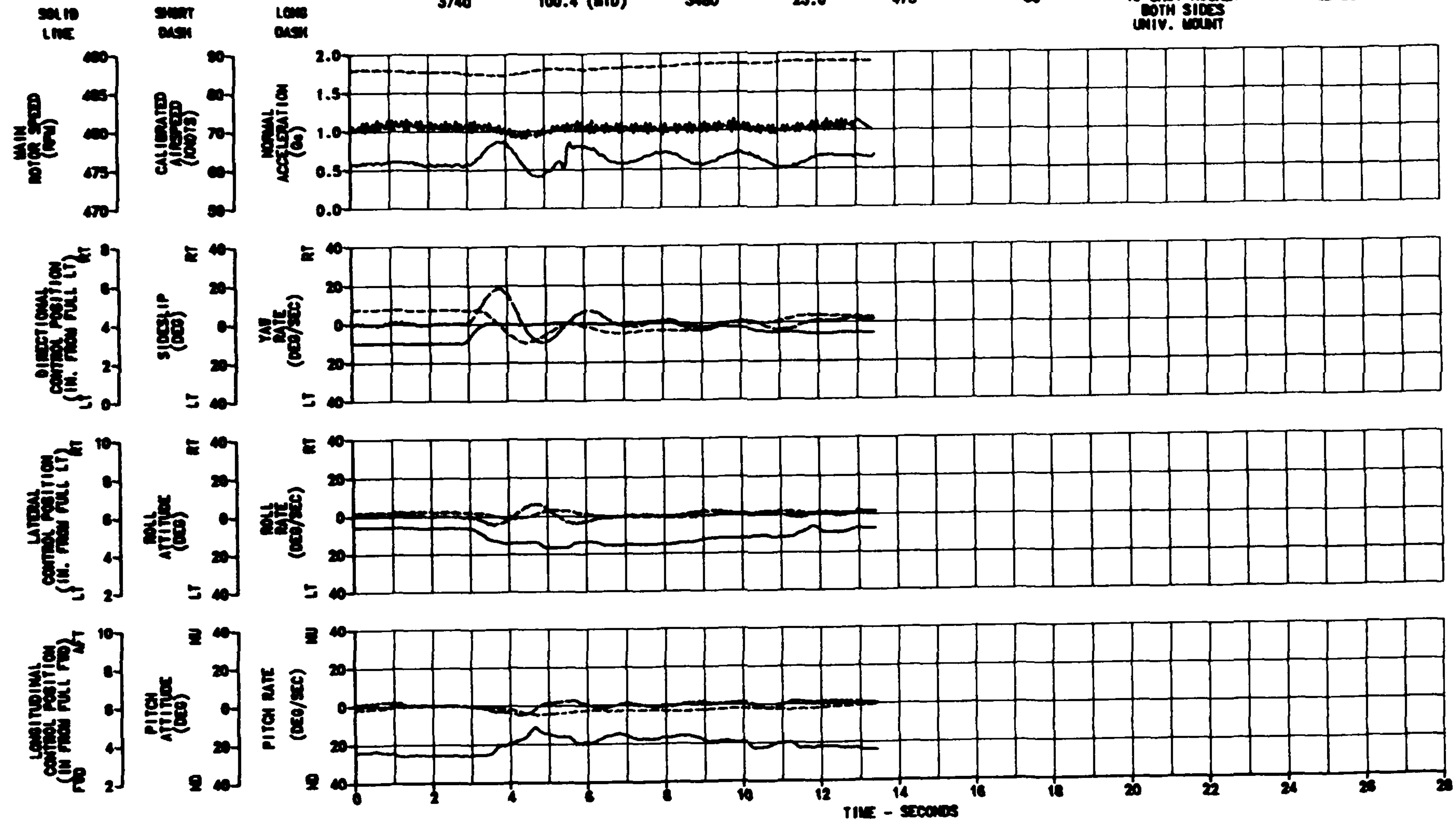
319 055 05X 7 48 14 0 7 48 44 855

FIGURE 98

RELEASE FROM STEADY HEADING SIDESLIP

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3740	100.4 (MID)	5480	23.0	475	88	19-SHOT ROCKET BOTH SIDES UNIV. MOUNT	LEVEL



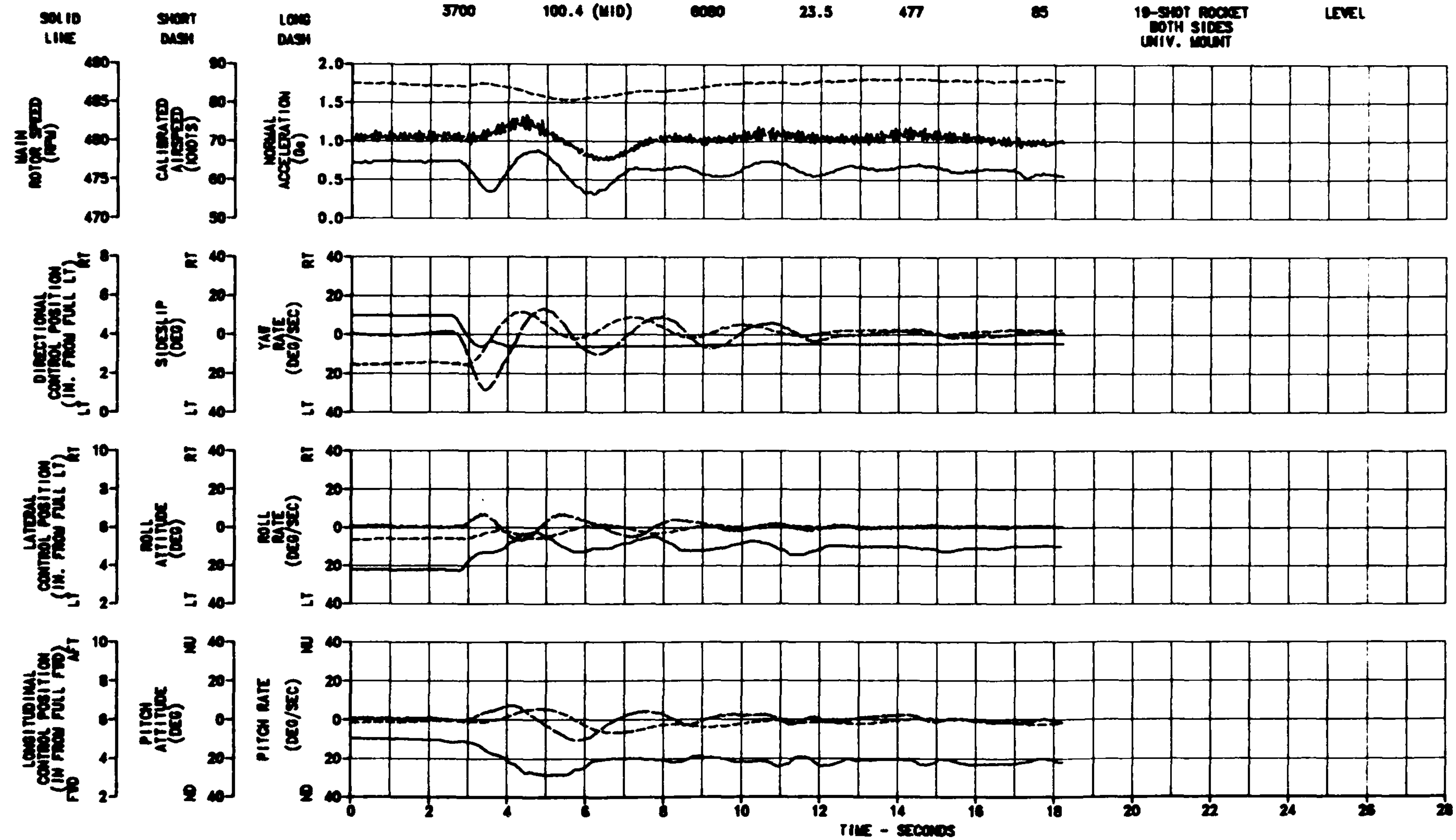
319 086 27X 8 8 33 0 8 8 46 525

FIGURE 99

RELEASE FROM STEADY HEADING SIDESLIP

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3700	100.4 (MID)	6080	23.5	477	85	19-SHOT ROCKET BOTH SIDES UNIV. MOUNT	LEVEL



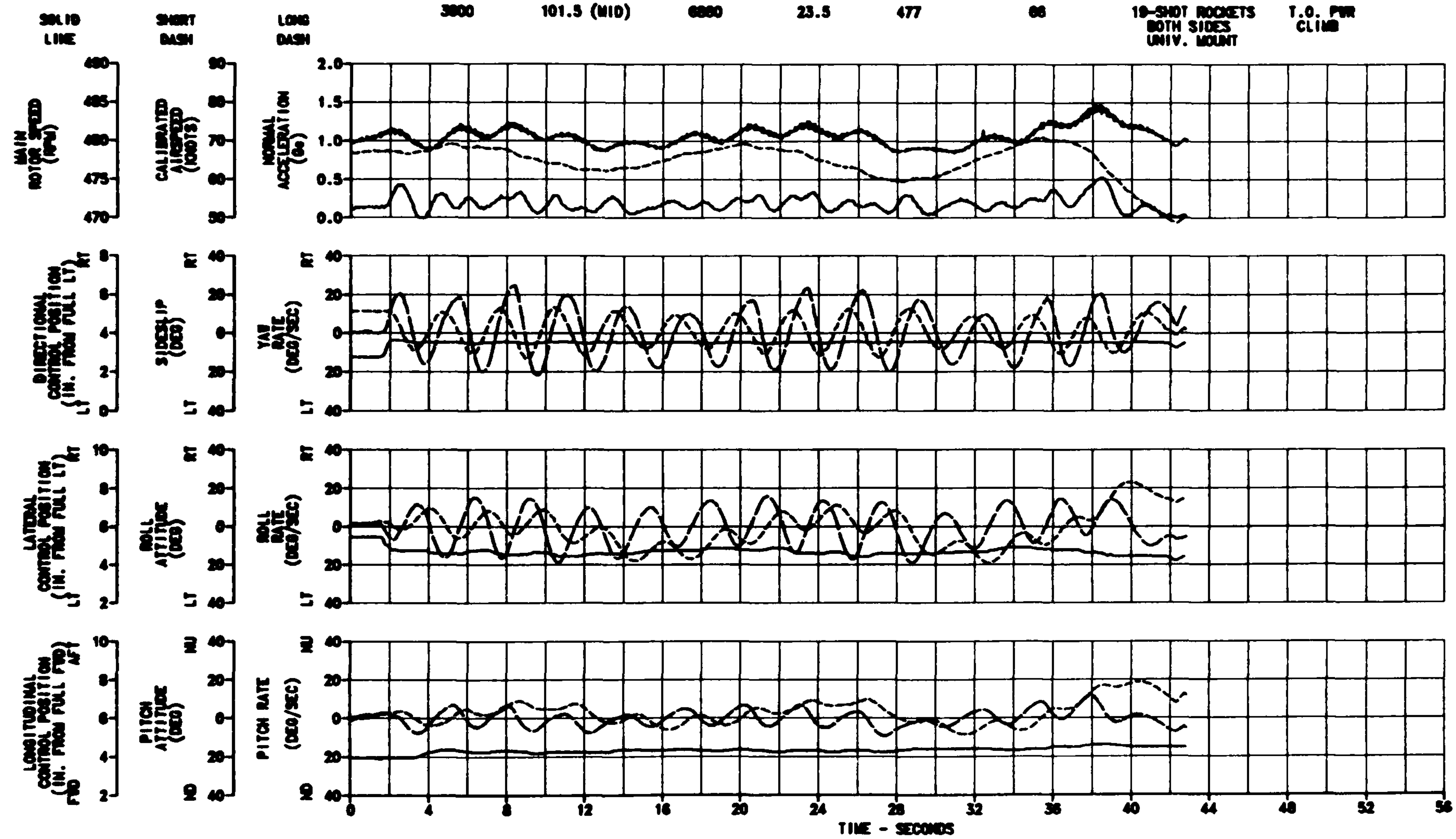
319 085 35X 8 19 17 0 8 19 35 261

FIGURE 100

RELEASE FROM STEADY HEADING SIDESLIP

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3800	101.5 (MID)	6860	23.5	477	66	19-SHOT ROCKETS BOTH SIDES UNIV. MOUNT	T.O. PWR CLIMB



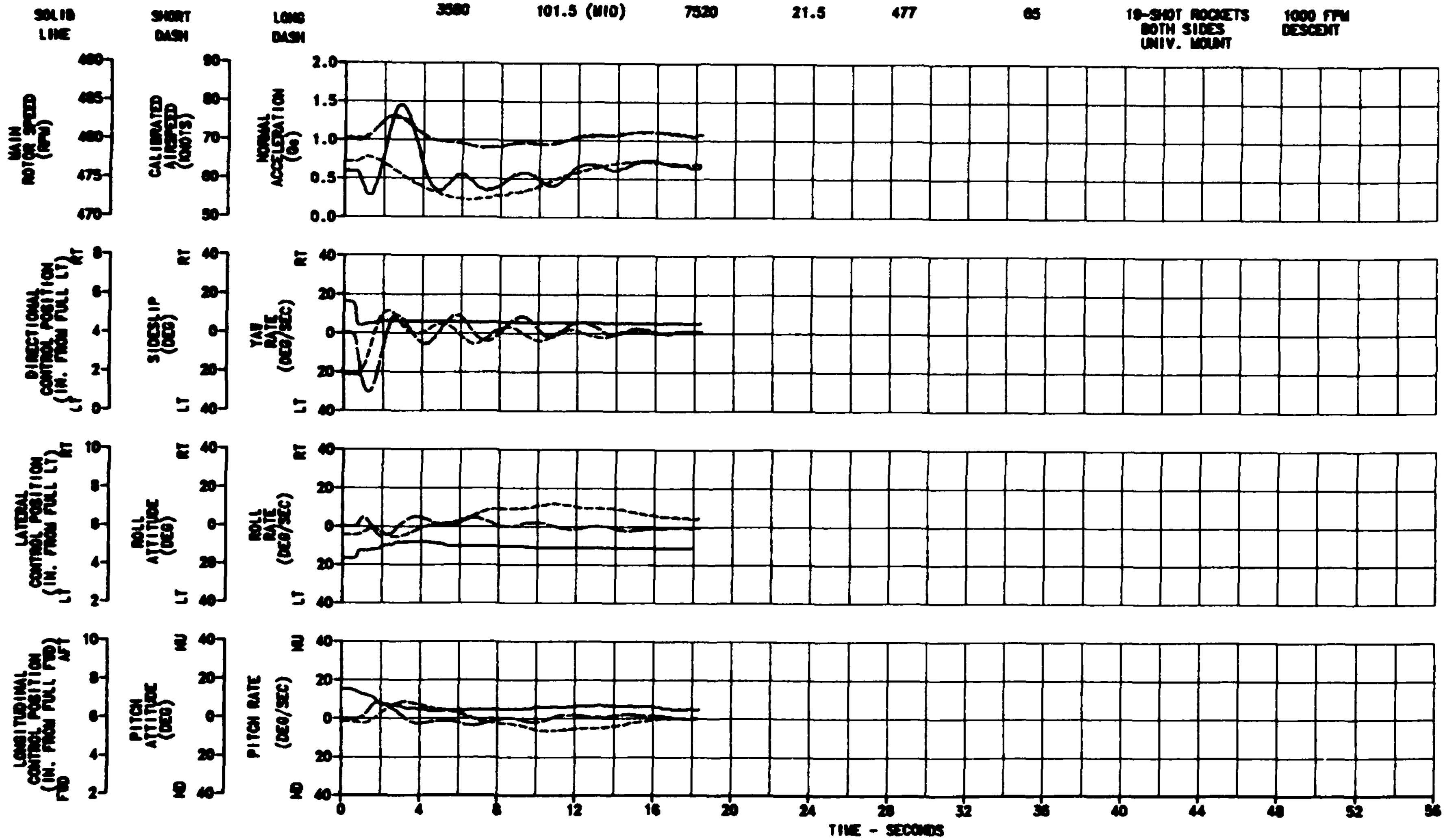
319 112 46X 7 9 28 0 7 10 10 838

FIGURE 101

RELEASE FROM STEADY HEADING SIDESLIP

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3580	101.5 (MID)	7520	21.5	477	65	19-SHOT ROCKETS BOTH SIDES UNIV. MOUNT	1000 FPM DESCENT



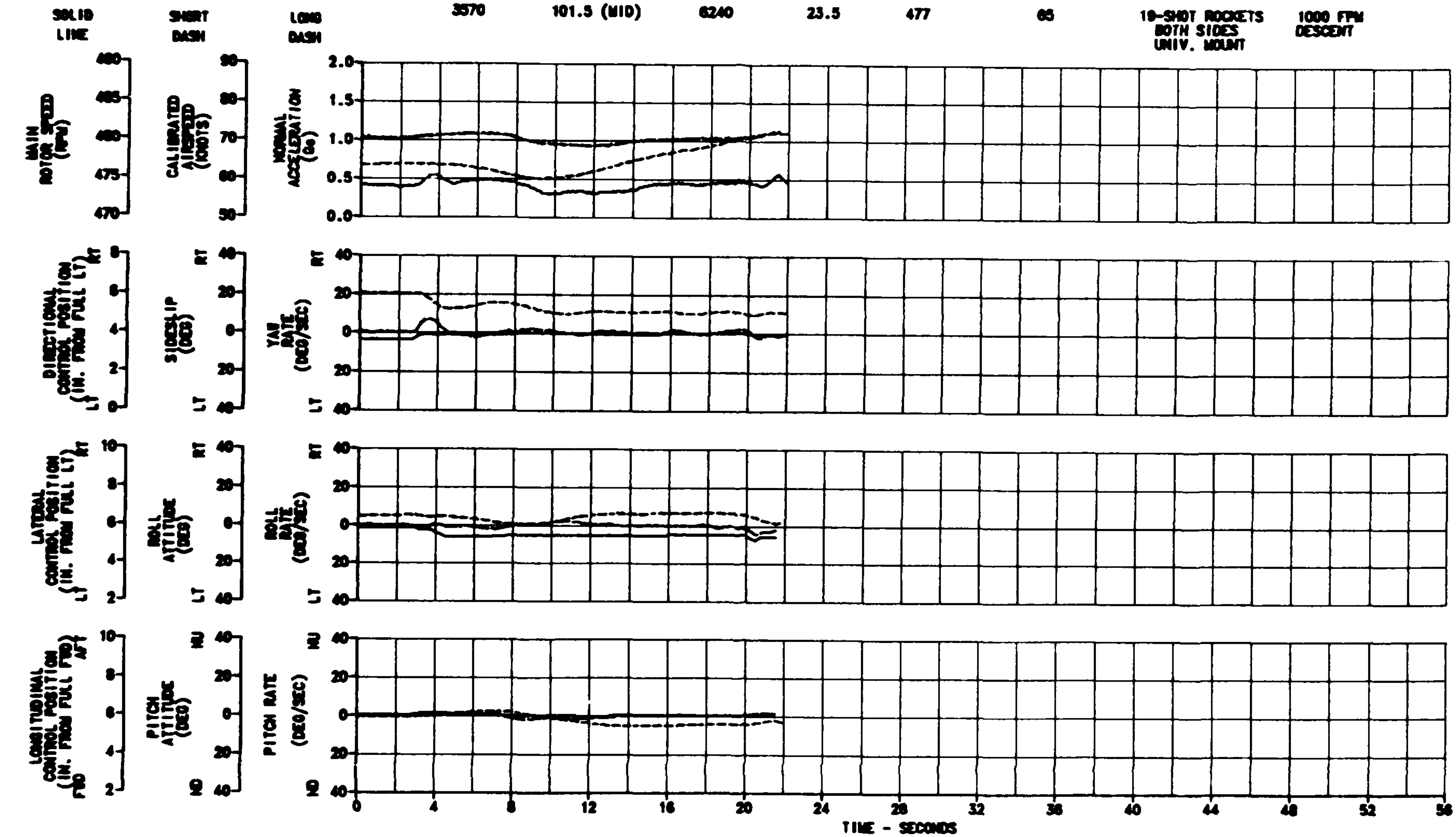
319 112 58X 7 17 0 0 7 17 18 384

FIGURE 102

RELEASE FROM STEADY HEADING SIDESLIP

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3570	101.5 (MID)	6240	23.5	477	65	19-SHOT ROCKETS BOTH SIDES UNIV. MOUNT	1000 FPM DESCENT



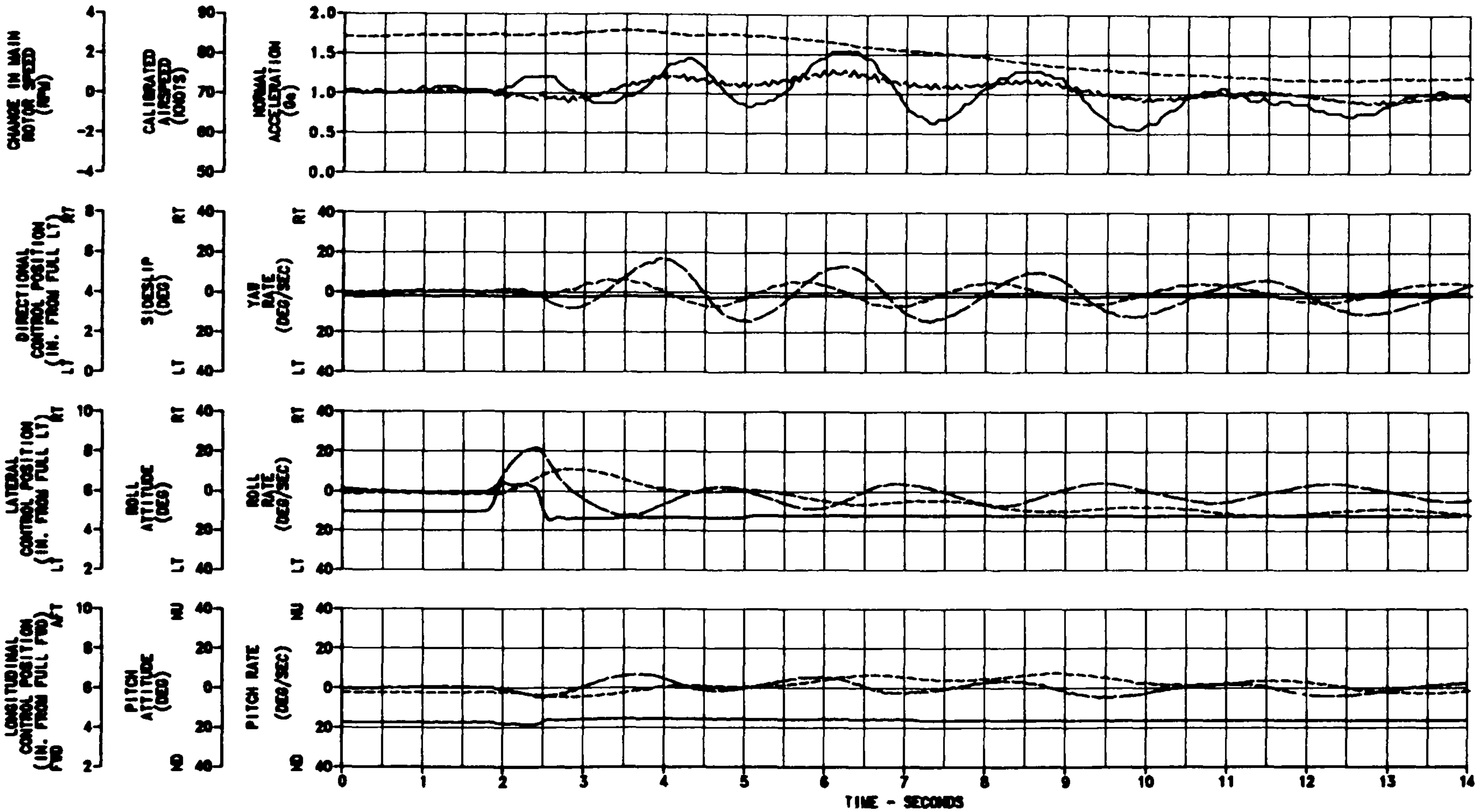
319 112 64X 7 22 33 0 7 22 54 128

FIGURE: E-103

RIGHT LATERAL PULSE IN LEVEL FLIGHT

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3180	102.0 (MID)	6680	15.5	477	84	19-SHOT ROCKET BOTH SIDES UNIV. MOUNT	LEVEL



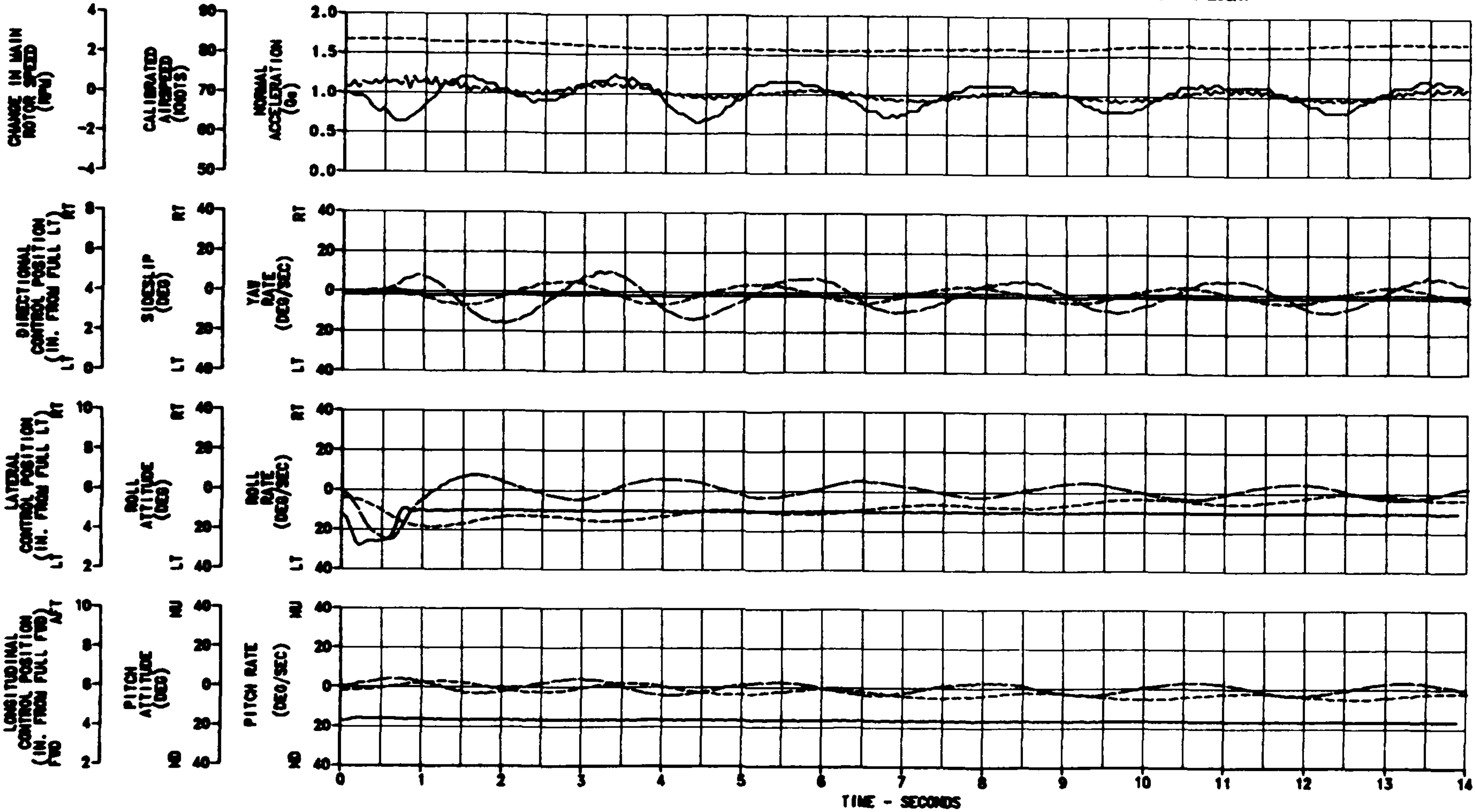
319 108 62X 8 7 30 0 8 7 55 450

FIGURE E-104

LEFT LATERAL PULSE IN LEVEL FLIGHT

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3190	102.0 (MID)	6060	15.0	477	84	19-SHOT ROCKET BOTH SIDES UNIV. MOUNT	LEVEL



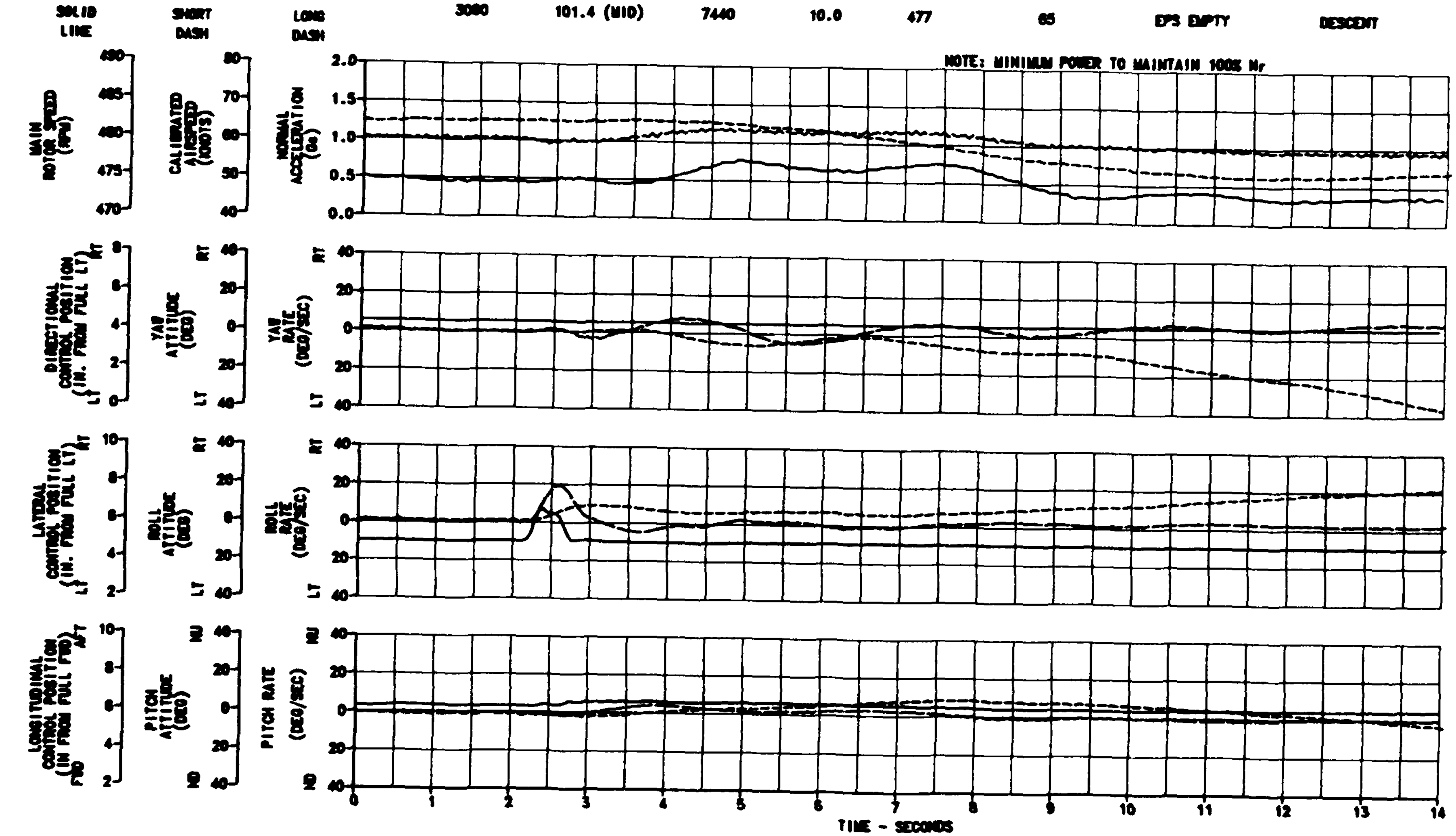
319 108 61X 8 6 1 0 8 6 33 438

FIGURE E-105

RIGHT LATERAL PULSE IN DESCENT

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3080	101.4 (MID)	7440	10.0	477	65	EPS EMPTY	DESCENT



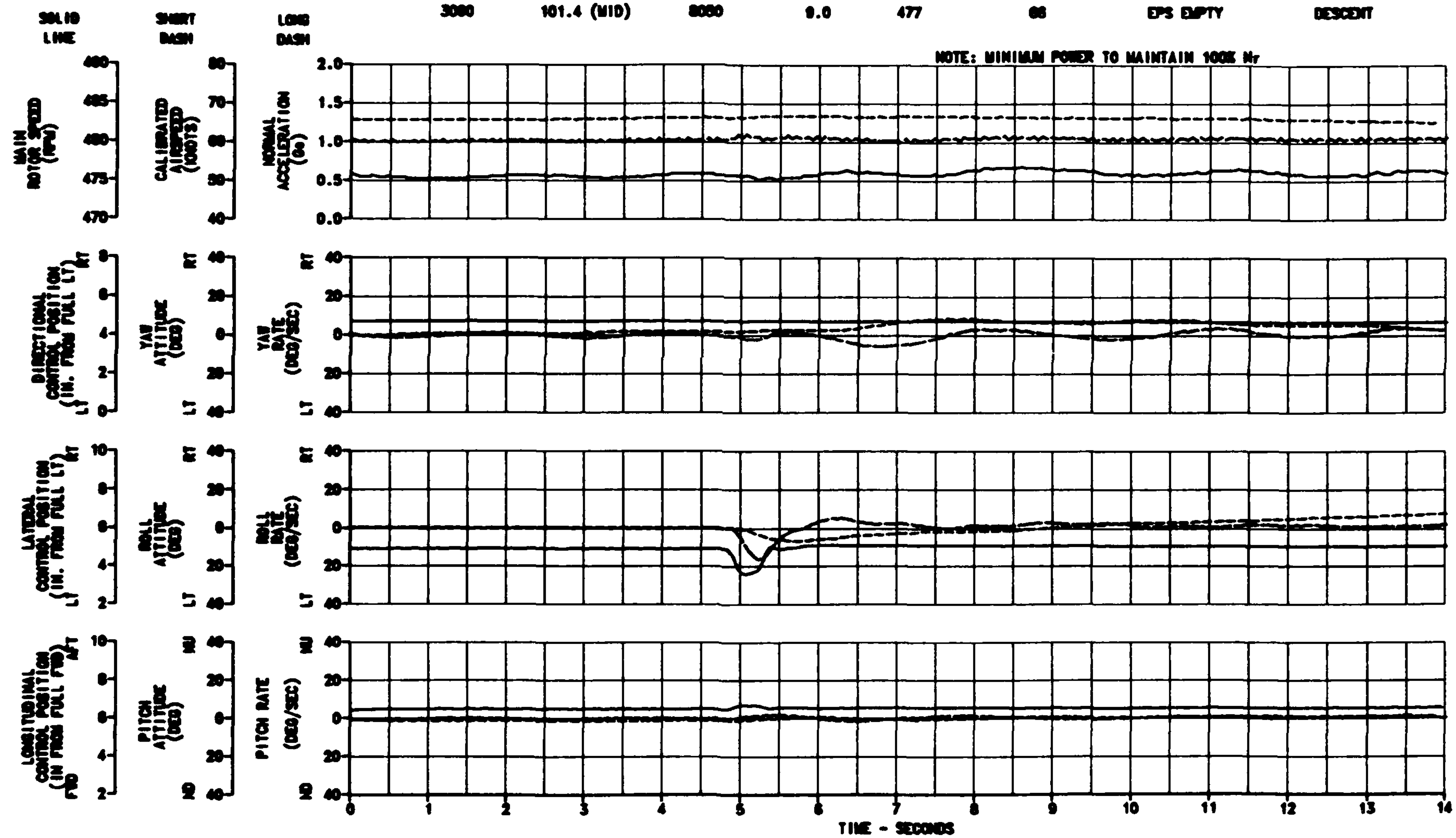
319 030 07X 7 12 46 0 7 13 8 83

FIGURE E-106

LEFT LATERAL PULSE IN DESCENT

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3080	101.4 (MID)	8080	9.0	477	68	EPS EMPTY	DESCENT



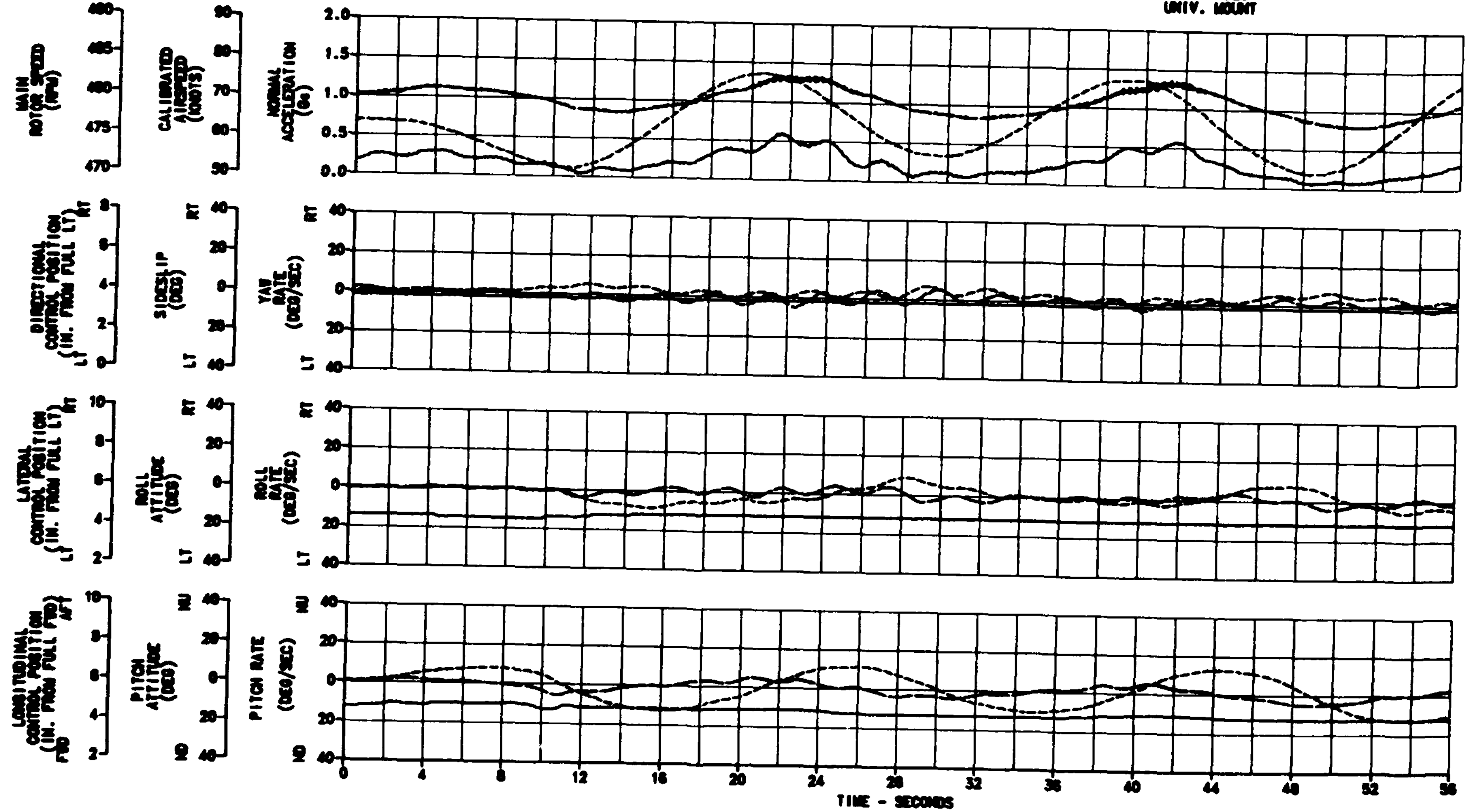
319 080 08X 7 12 6 0 7 12 26 740

FIGURE 107

LONGITUDINAL LONG-TERM RESPONSE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3700	101.5 (MID)	7800	21.5	477	64	19-SHOT ROCKETS BOTH SIDES UNIV. MOUNT	LEVEL



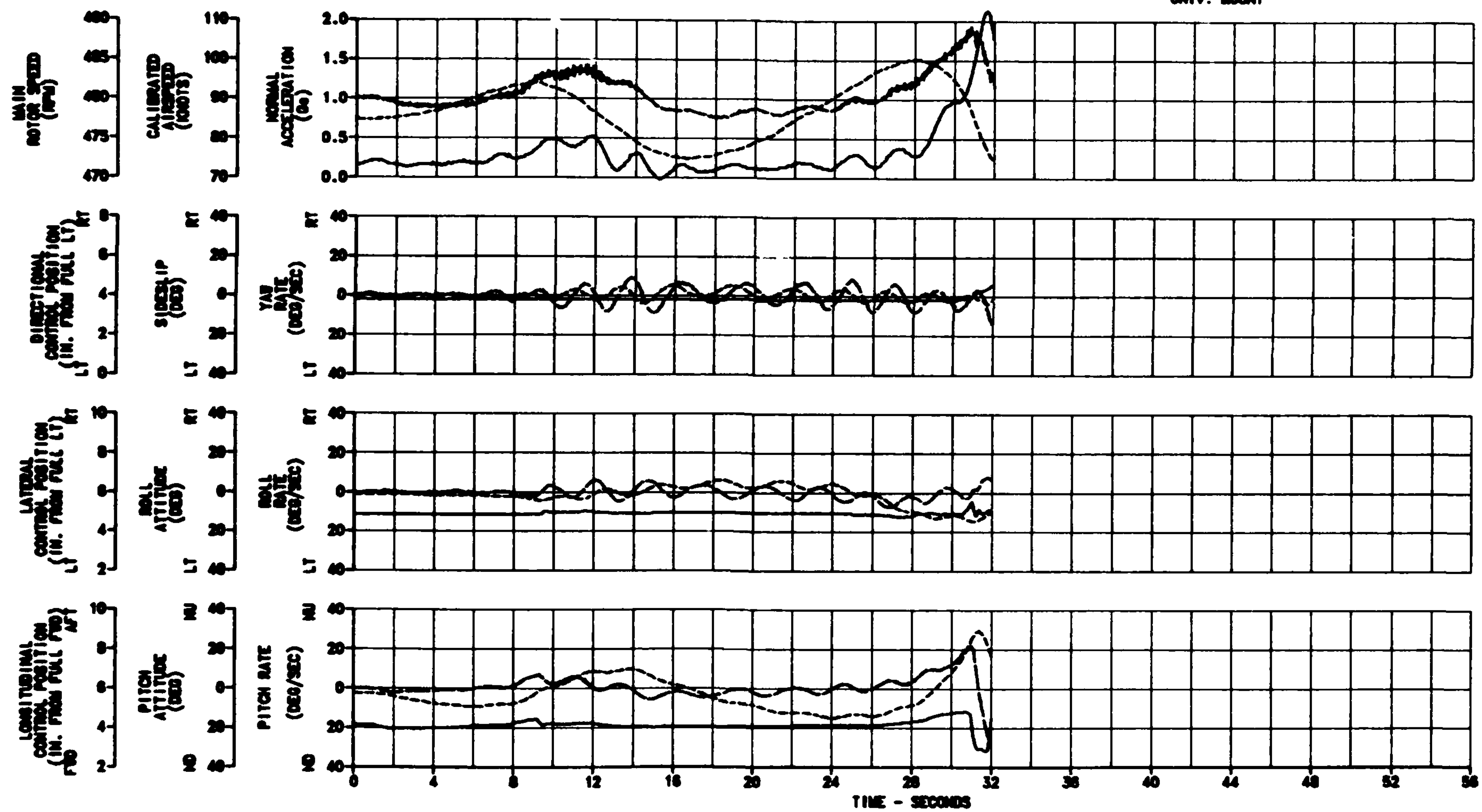
319 112 18X 6 30 56 0 6 41 20 386

FIGURE 108

LONGITUDINAL LONG-TERM RESPONSE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3080	101.5 (MID)	6180	24.0	477	85	19-SHOT ROCKETS BOTH SIDES UNIV. MOUNT	LEVEL



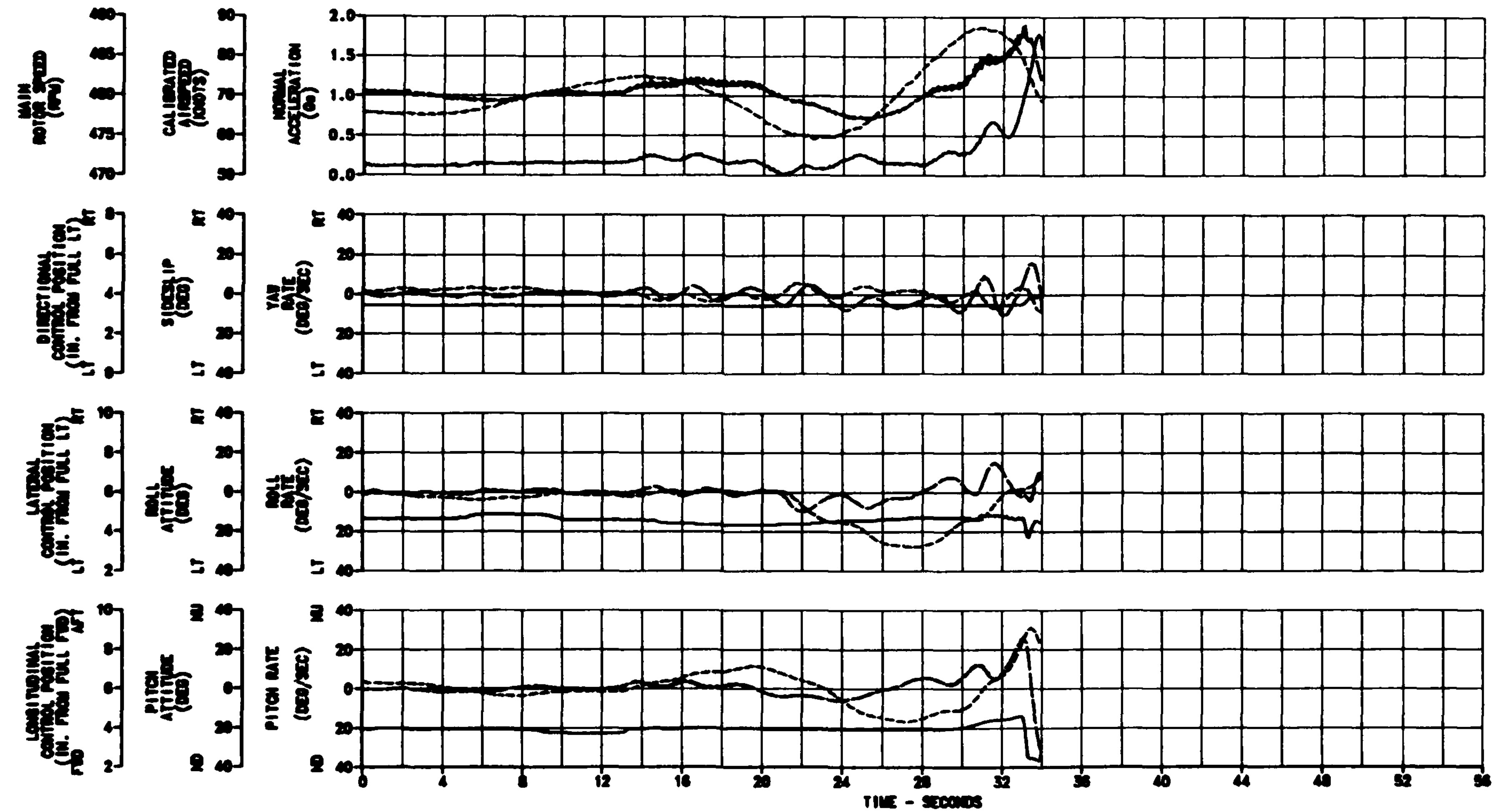
319 112 21X 6 46 6 0 6 46 38 1

FIGURE 109

LONGITUDINAL LONG-TERM RESPONSE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FEET)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KNOTS)	CONFIGURATION	FLIGHT CONDITION
3720	101.4 (MID)	[illegible]	23.5	477	65	19-SHOT ROCKETS BOTH SIDES UNIV. MOUNT	T.O. PWR CLIMB



319 112 16K 6 37 15 0 6 37 40 1

FIGURE E-110
LONGITUDINAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
2860	101.5(MID)	6200	10.0	477	65

NOTES: 1. EPS EMPTY
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

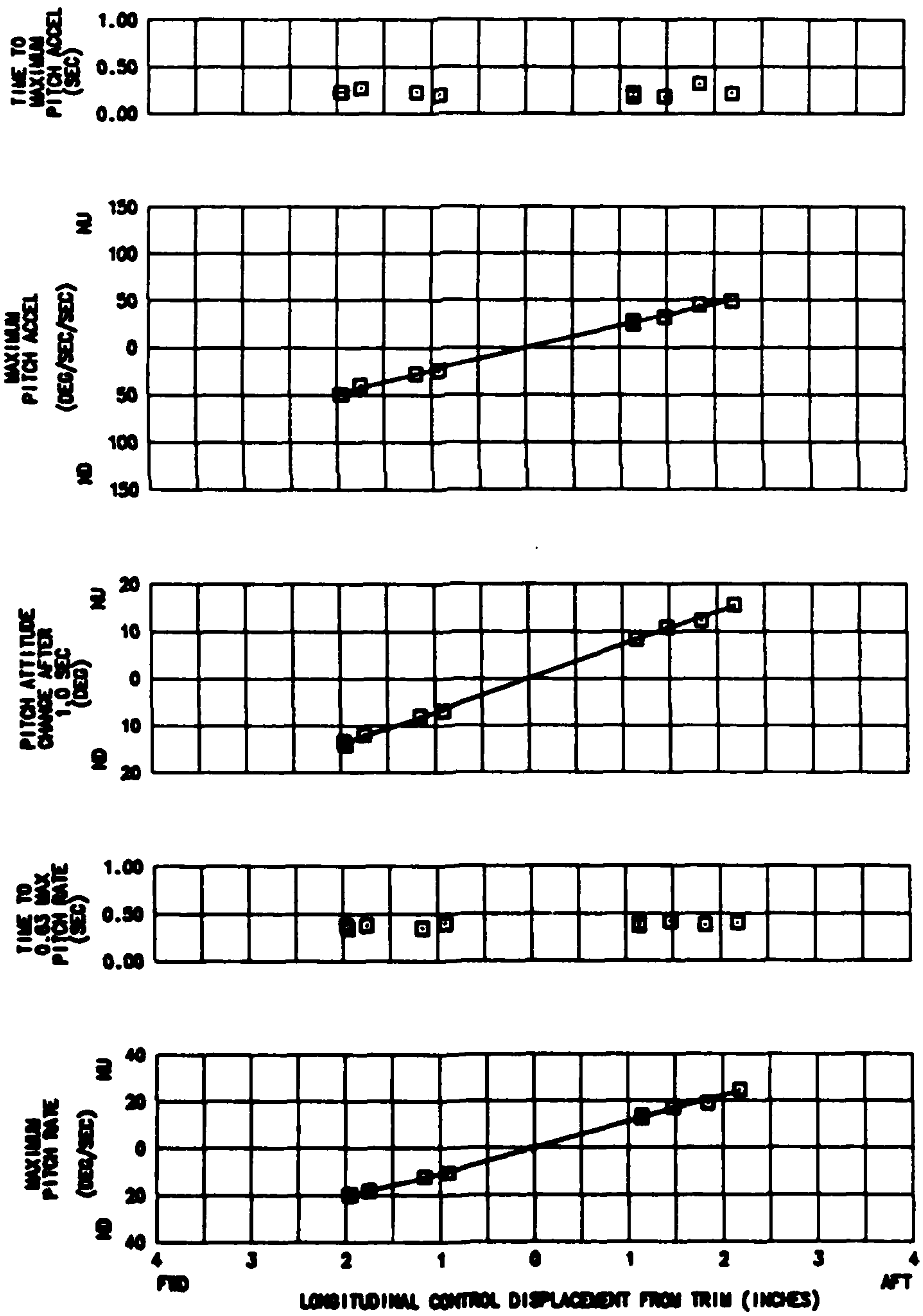


FIGURE E-111
LONGITUDINAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
2930	101.5(MID)	6290	10.0	477	85

NOTES: 1. EPS EMPTY
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

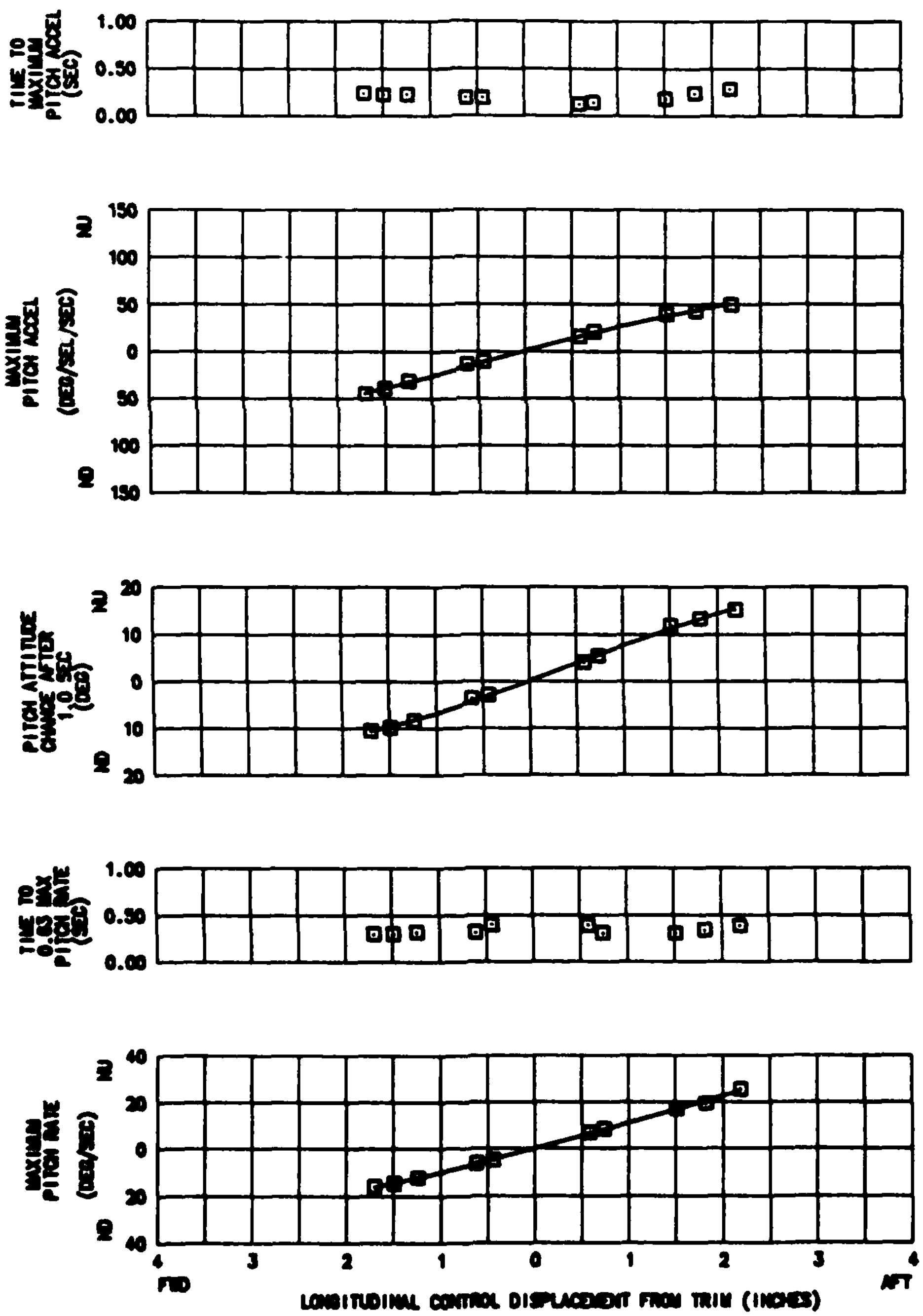


FIGURE E-112
LONGITUDINAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
2780	101.7(MID)	6170	11.0	477	102

NOTES: 1. EPS EMPTY
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

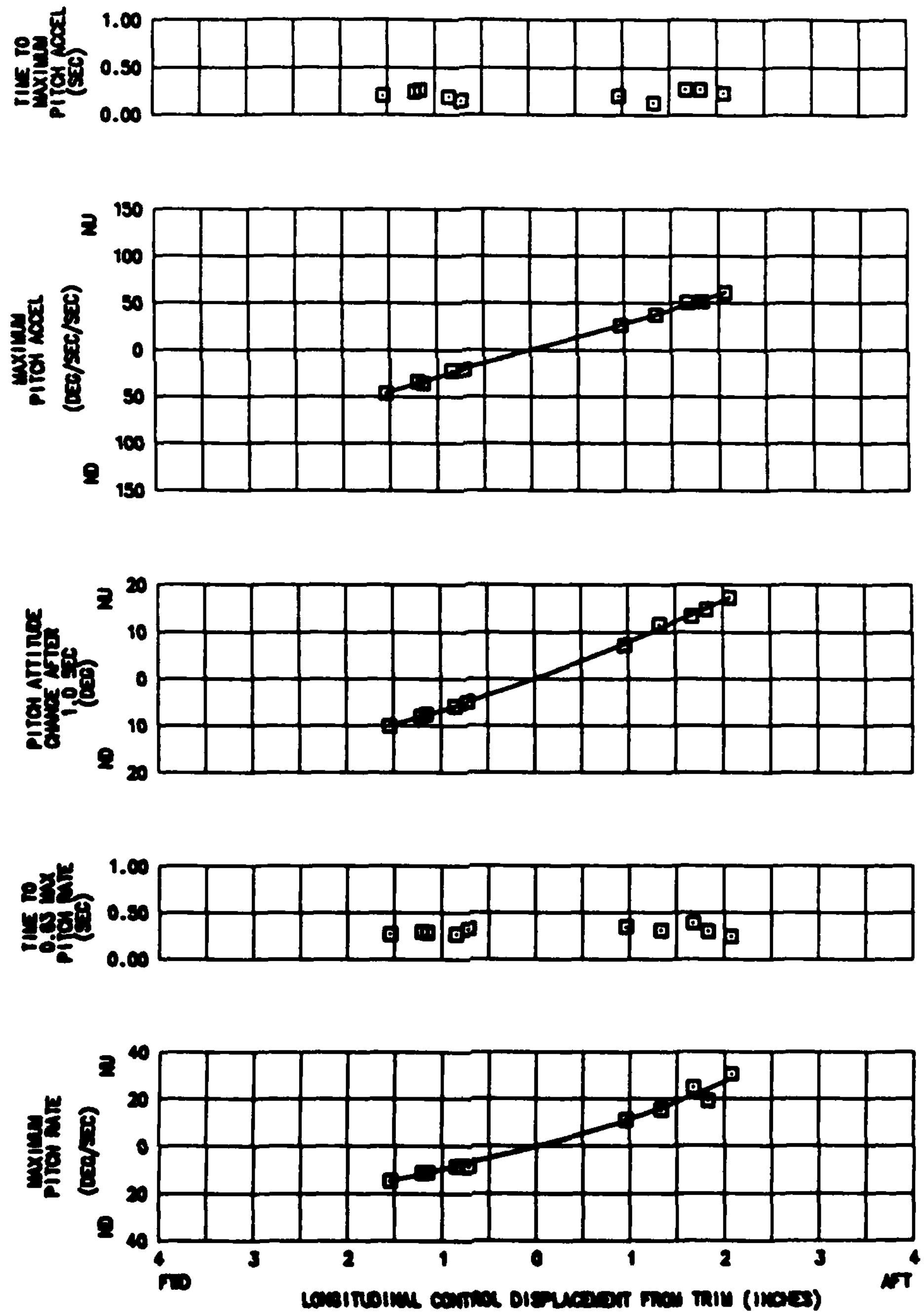


FIGURE E-113
LONGITUDINAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3680	100.4(MID)	7630	29.0	477	63

NOTES: 1. PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

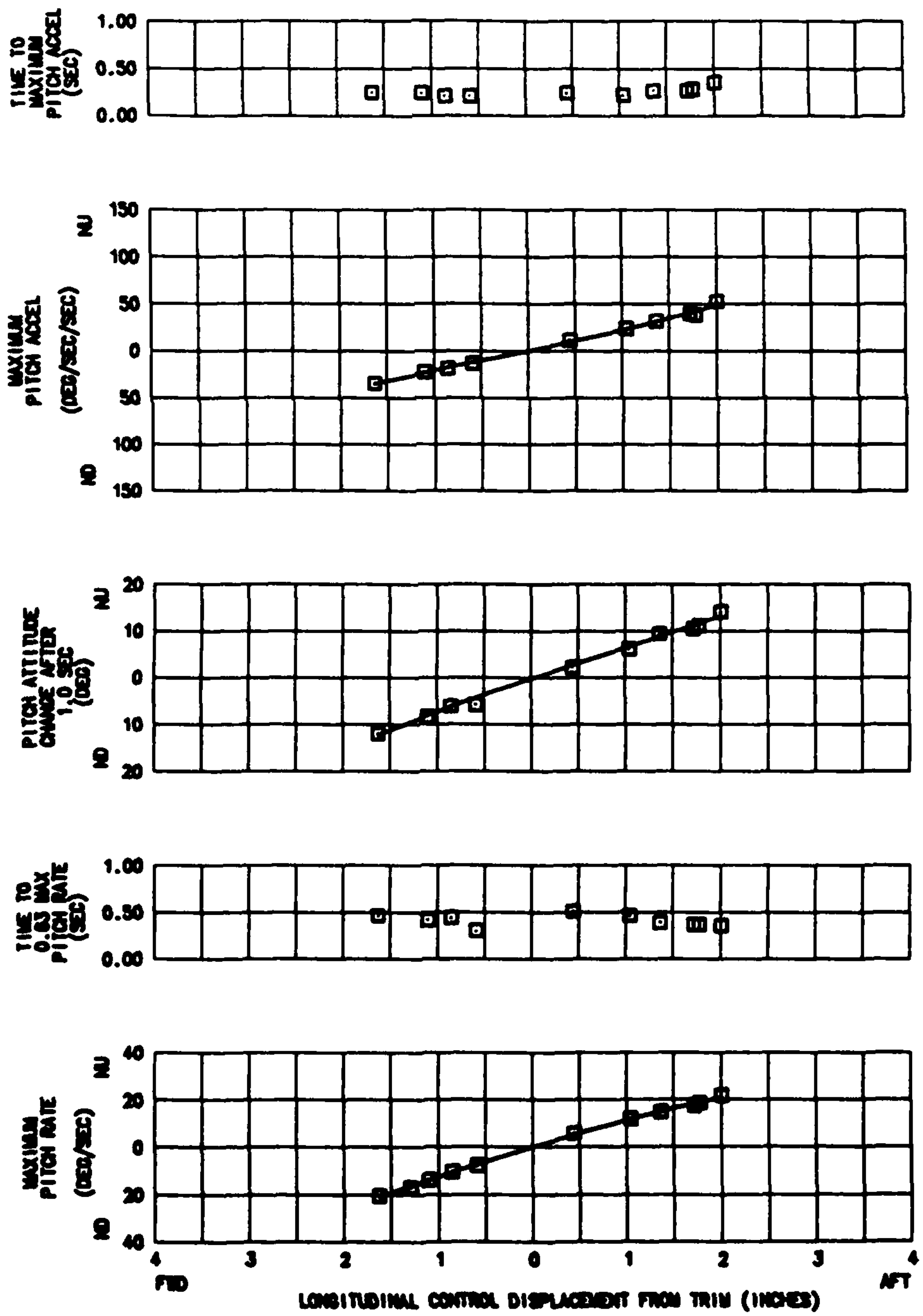


FIGURE E-114
LONGITUDINAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3270	101.9(MID)	6810	16.0	477	64

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

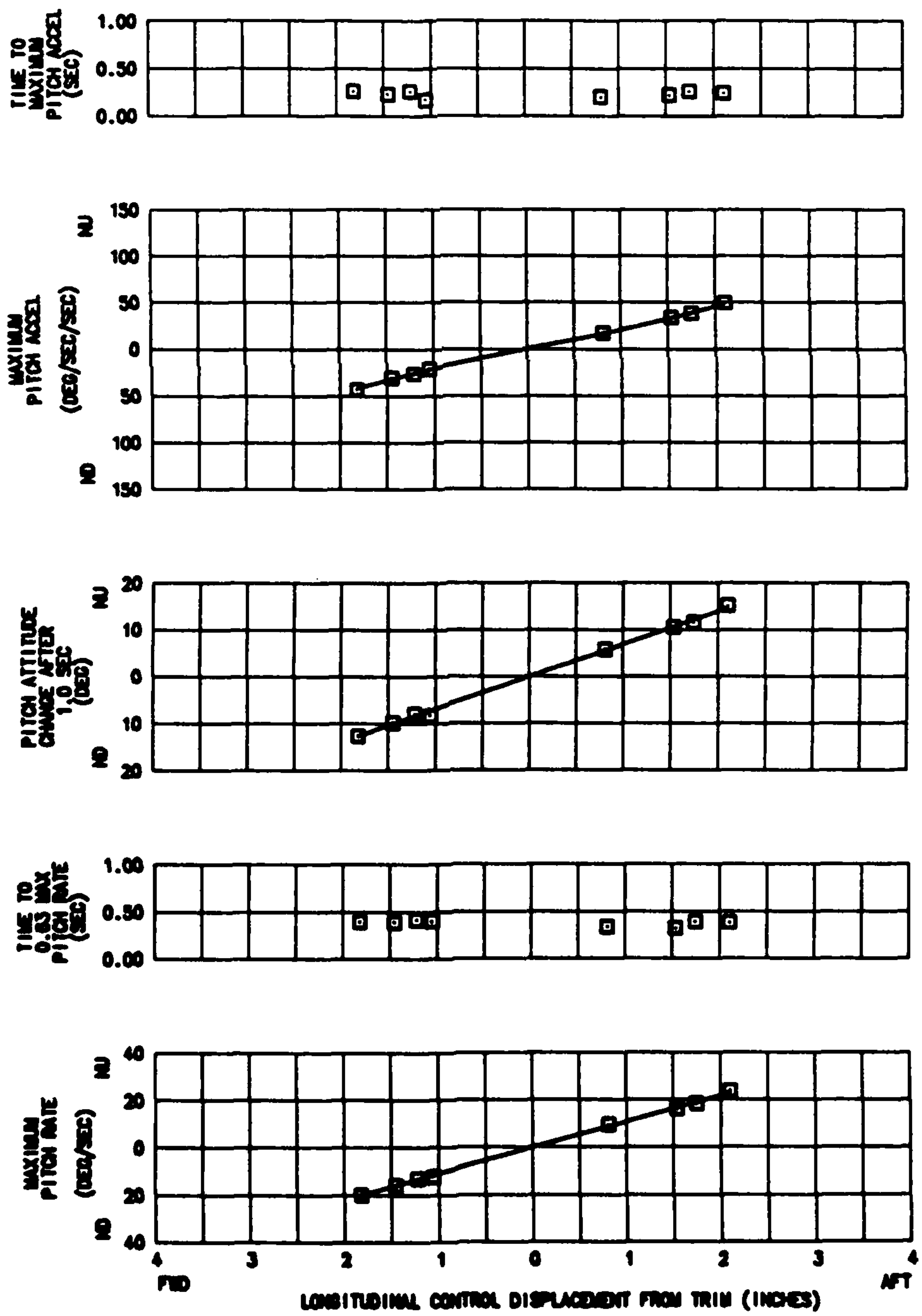


FIGURE E-115
LONGITUDINAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3080	102.4(MID)	6940	17.0	477	84

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

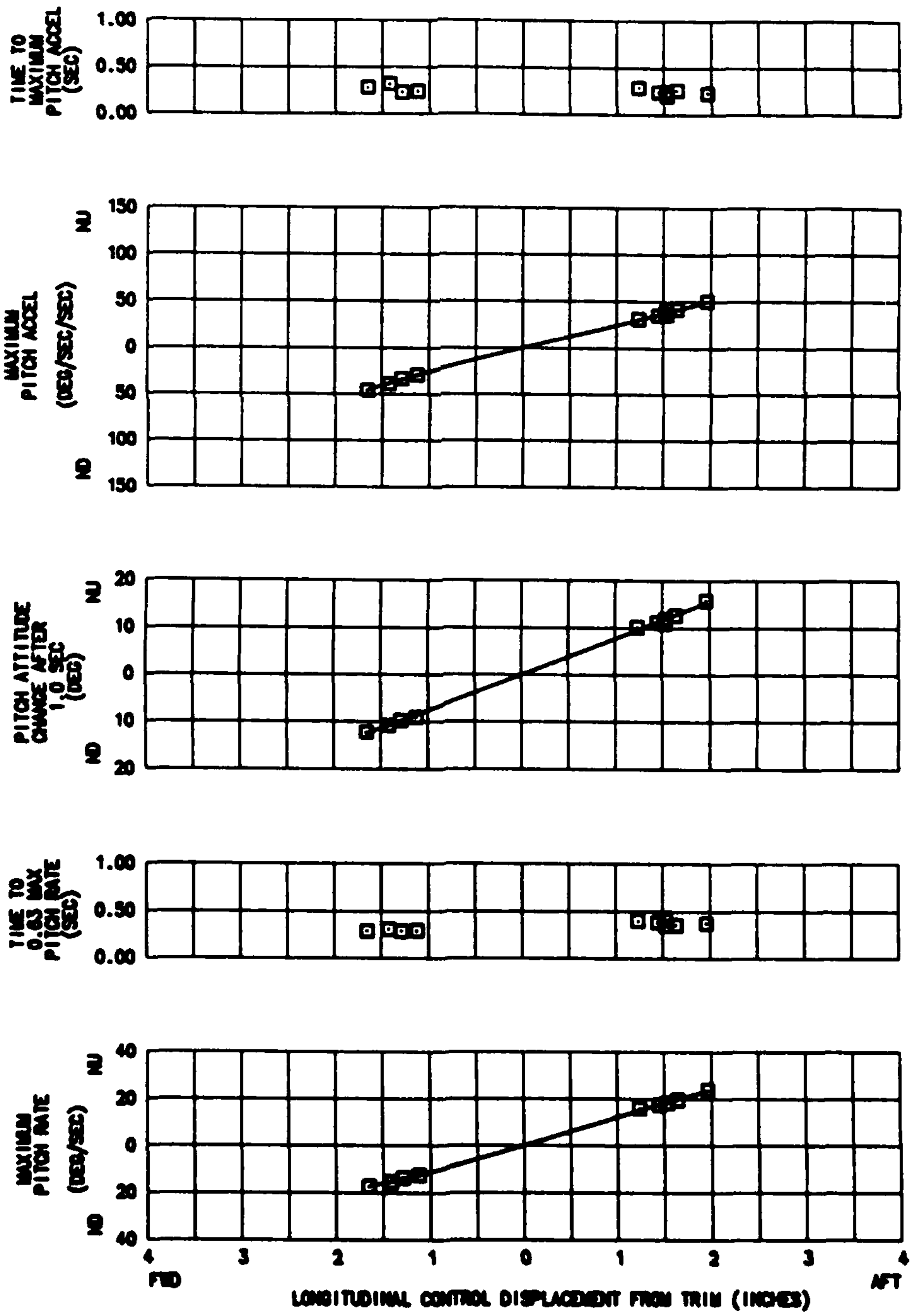


FIGURE E-116
LATERAL CONTROLLABILITY
AH-6G   USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
2990	101.4(MID)	5970	11.0	477	65

NOTES: 1. EPS EMPTY
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

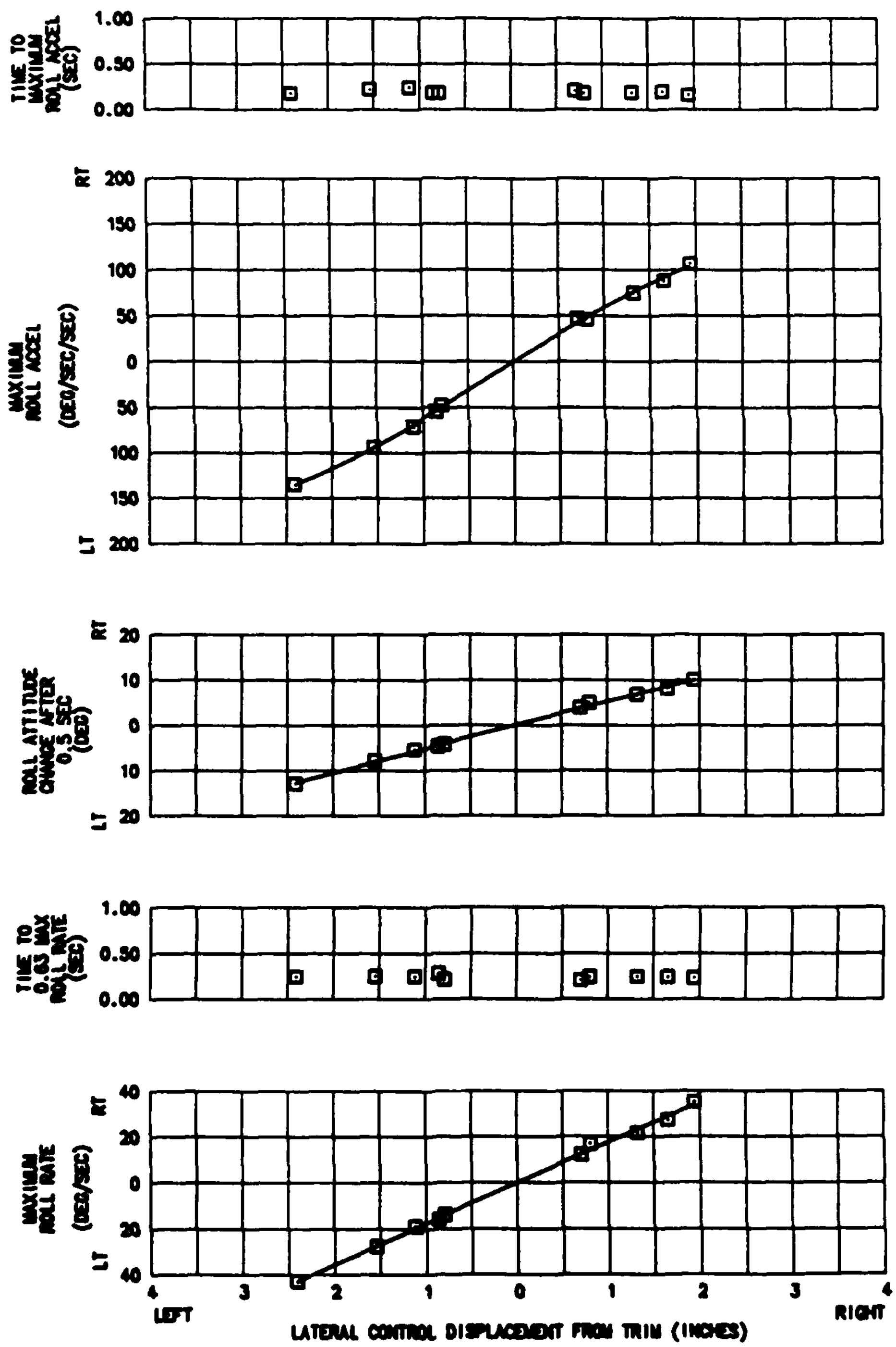


FIGURE E-117
LATERAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3020	101.4(MID)	5900	10.4	477	85

NOTES: 1. EPS EMPTY
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

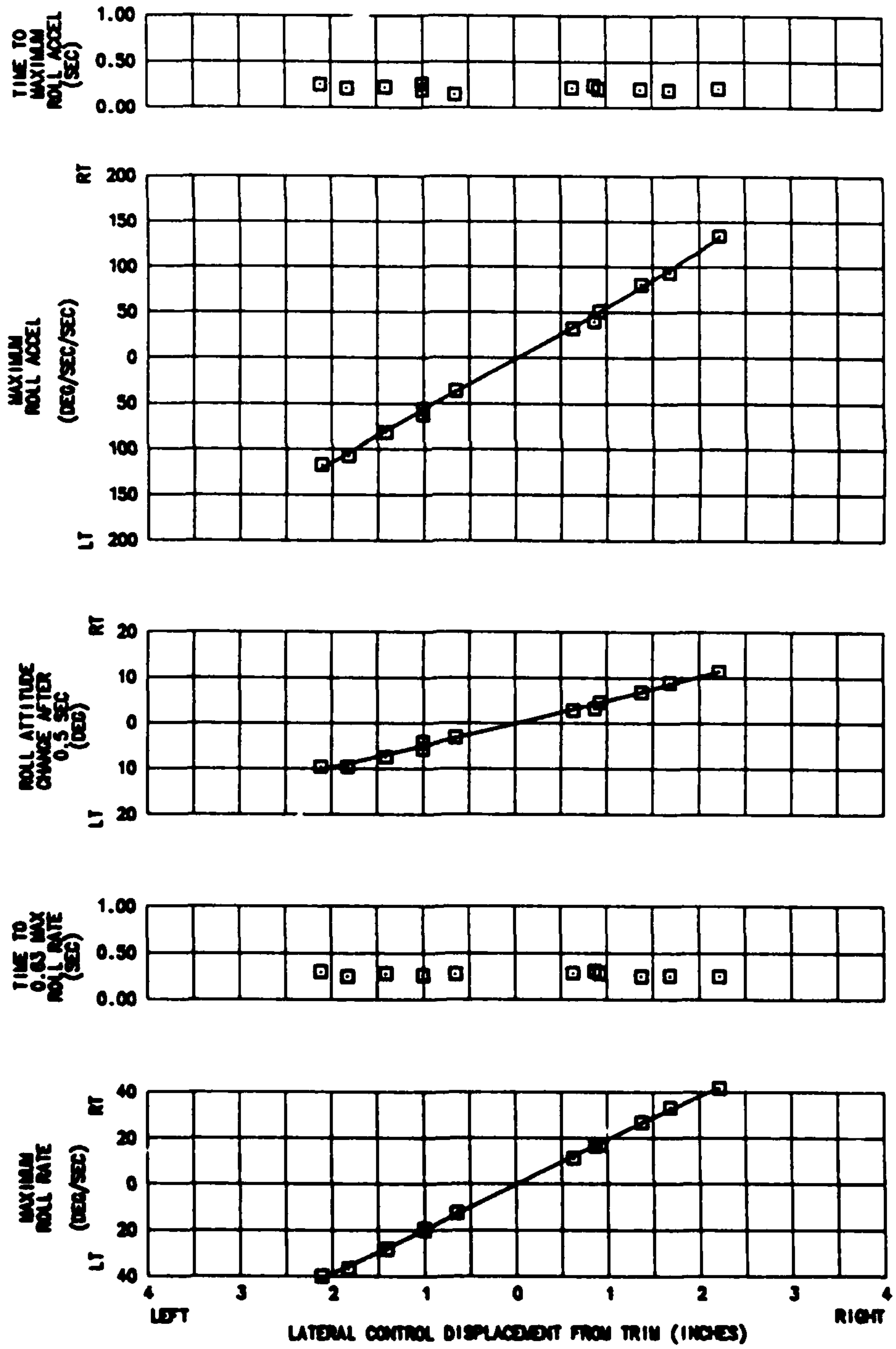


FIGURE E-118
LATERAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
2840	101.6(MID)	6230	11.0	477	103

NOTES: 1. EPS EMPTY
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

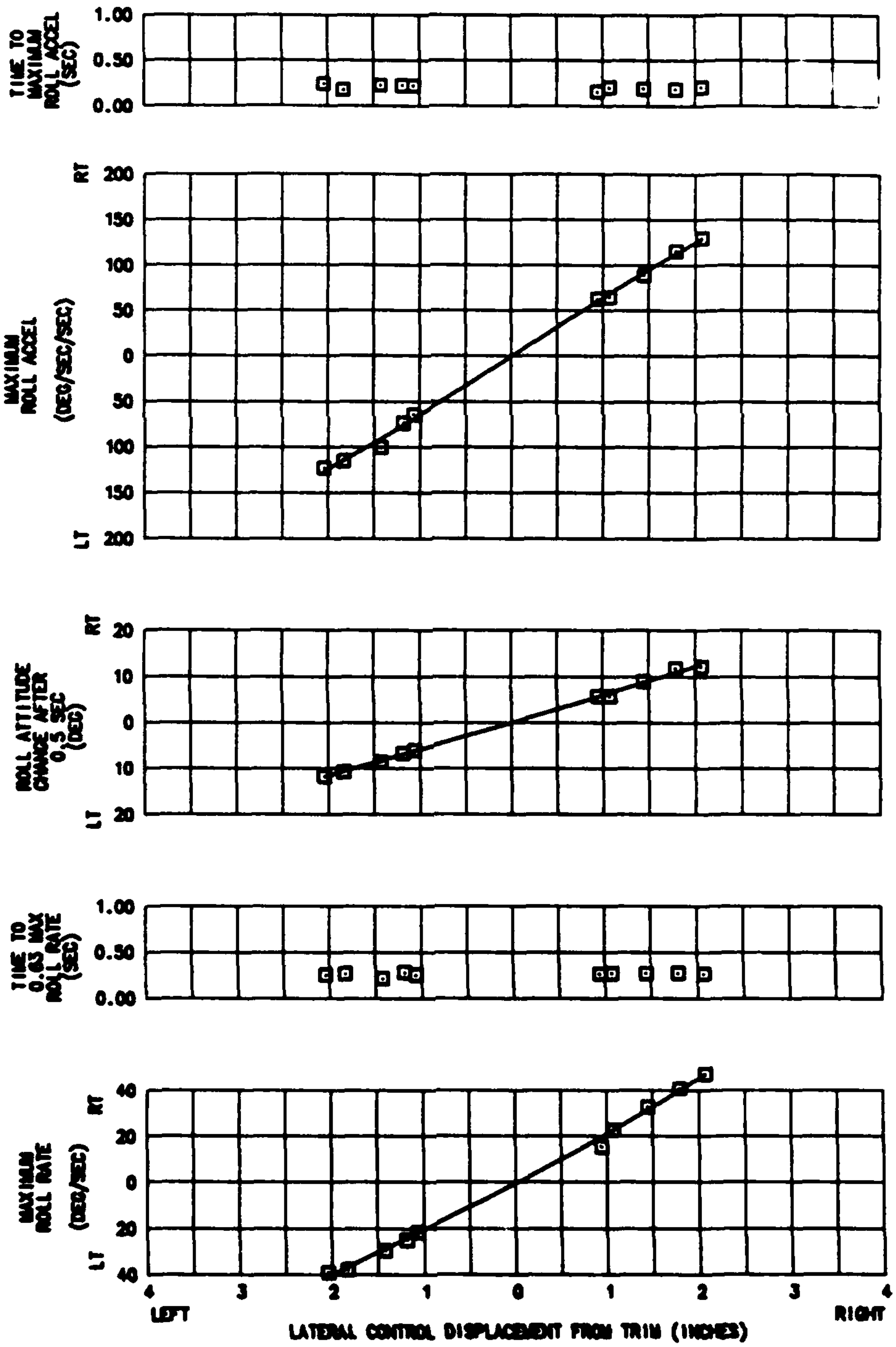


FIGURE E-119
LATERAL CONTROLLABILITY
AH-6C USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3800	100.4(MID)	7640	29.0	477	64

NOTES: 1. PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

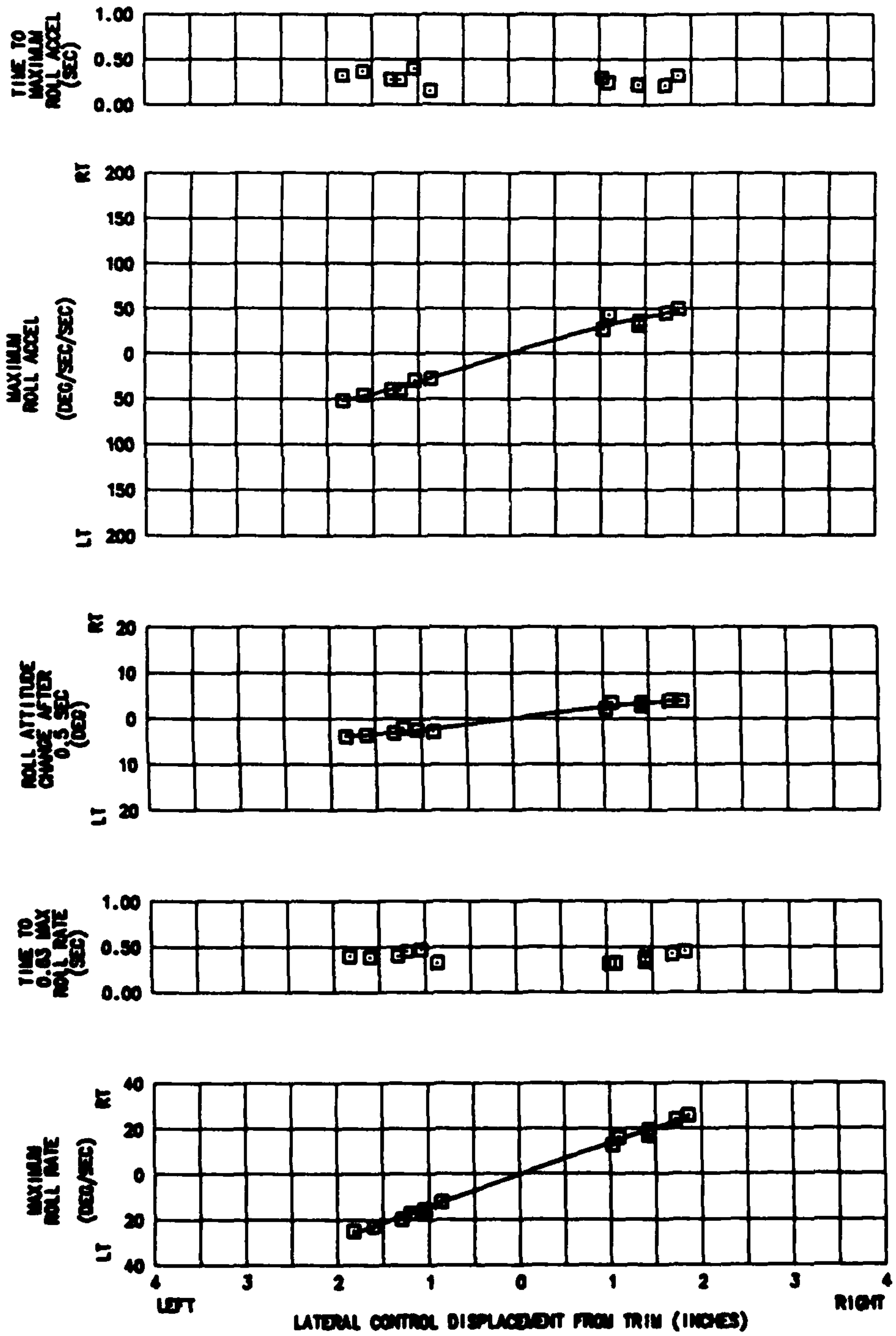


FIGURE E-120
LATERAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3010	102.7(MID)	3650	21.5	477	0

NOTES: 1. UNIV. MOUNTS WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: HOVER

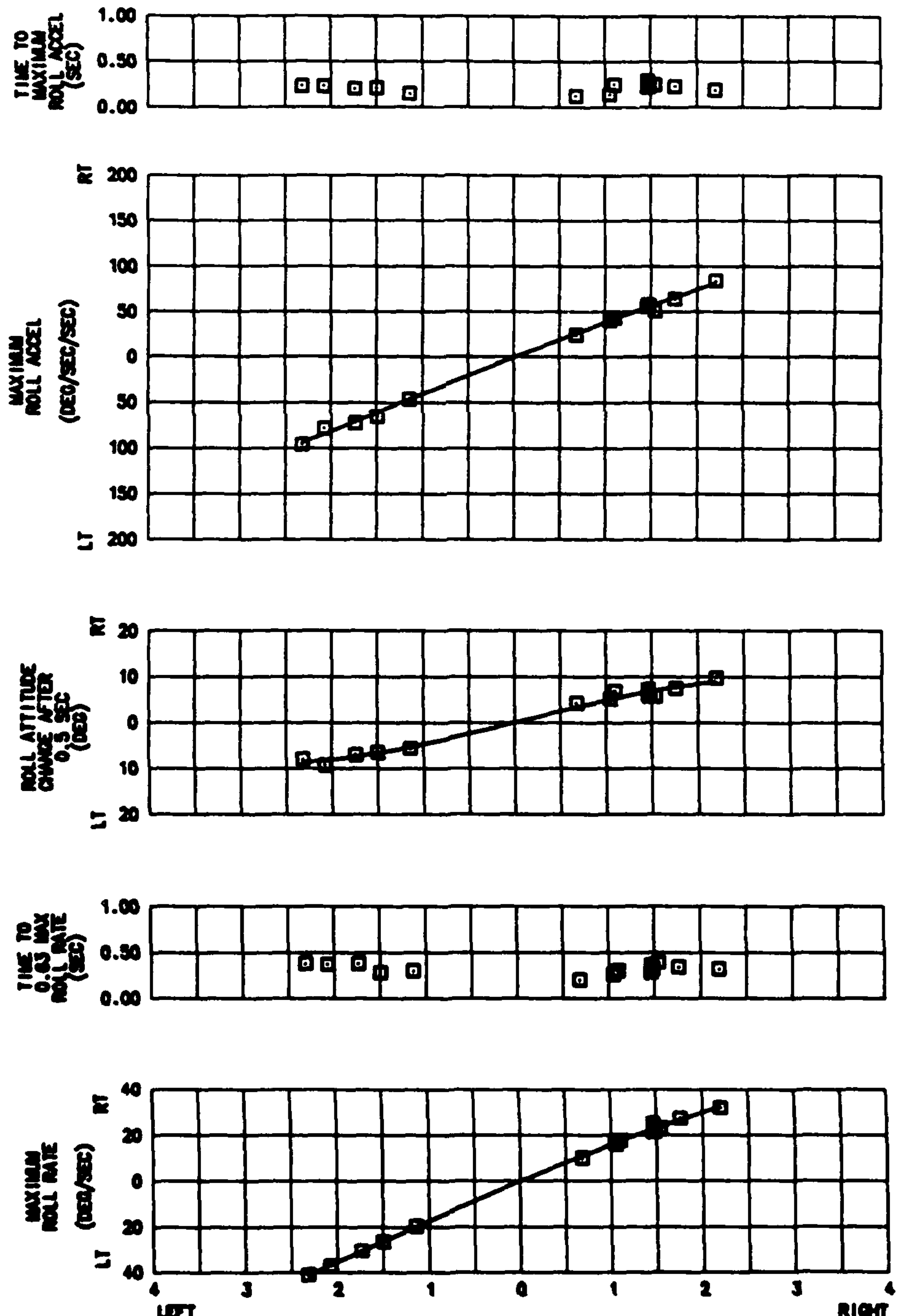


FIGURE E-121
LATERAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3350	101.8(MID)	6660	16.0	477	64

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

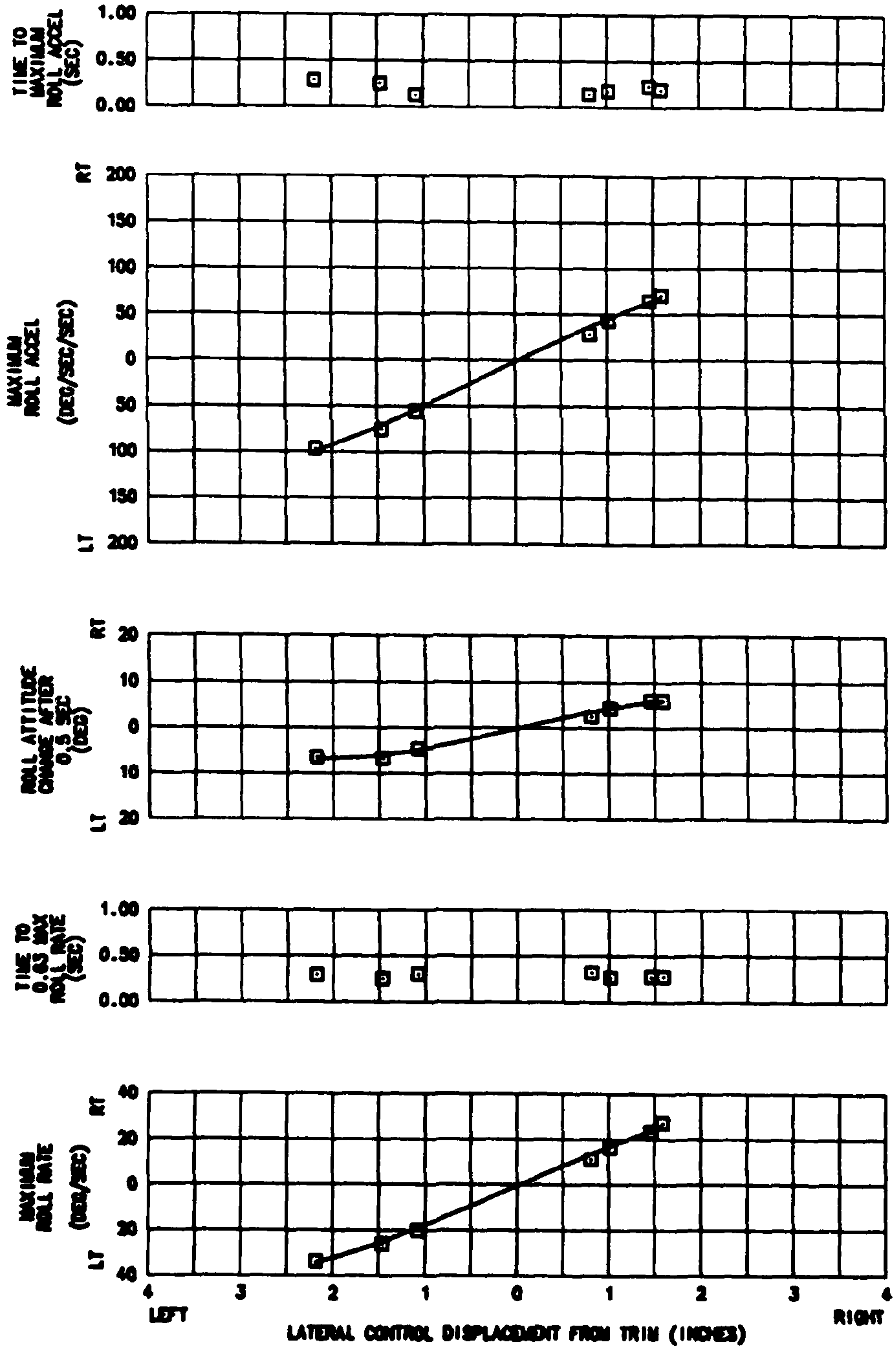


FIGURE E-122
LATERAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3180	102.0(MID)	6880	16.5	477	84

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

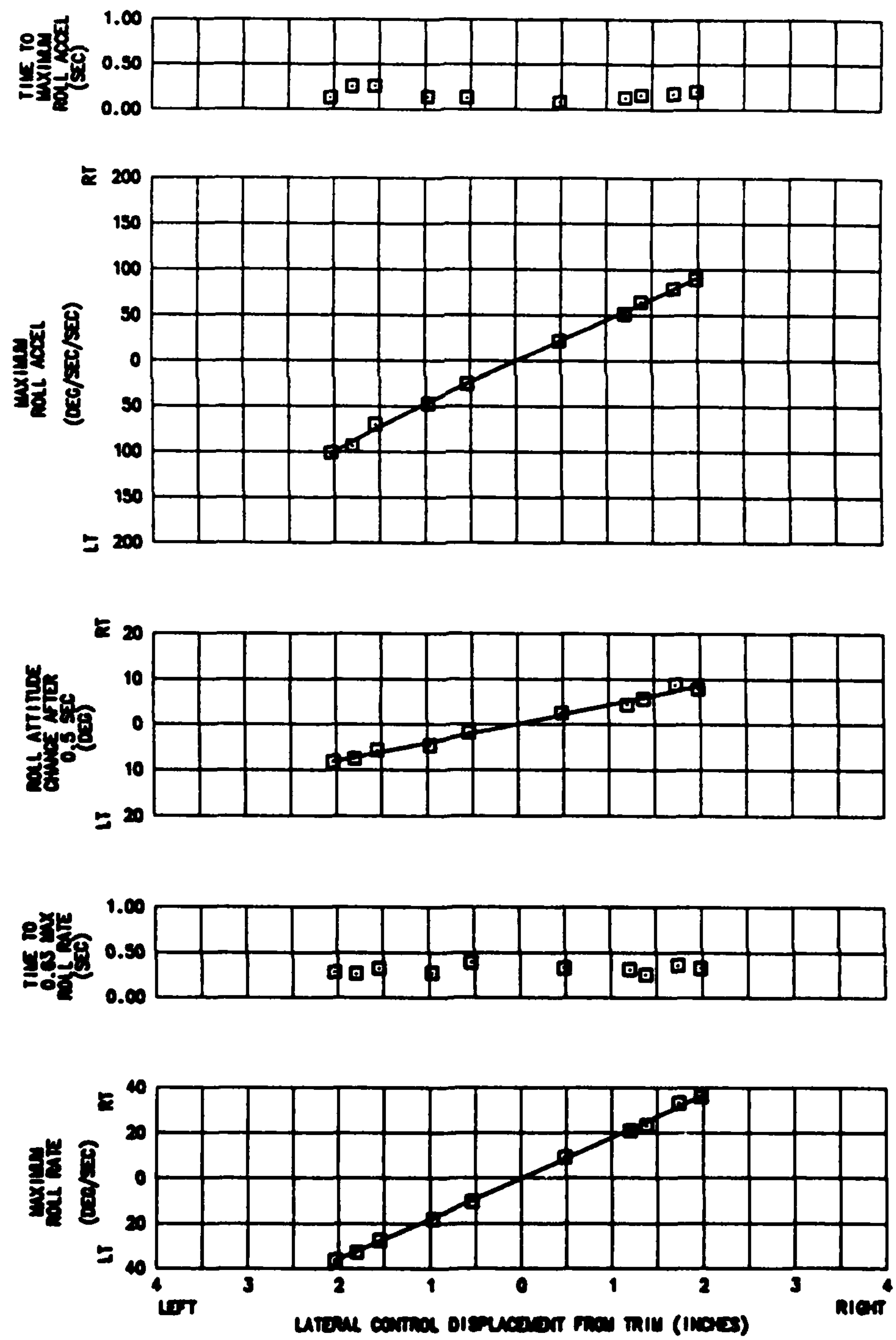


FIGURE E-123
LATERAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	(BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3460	101.3(MID)	4.9(LT)	6780	25.0	477	64

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS, RT ASYMM. LOADING
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

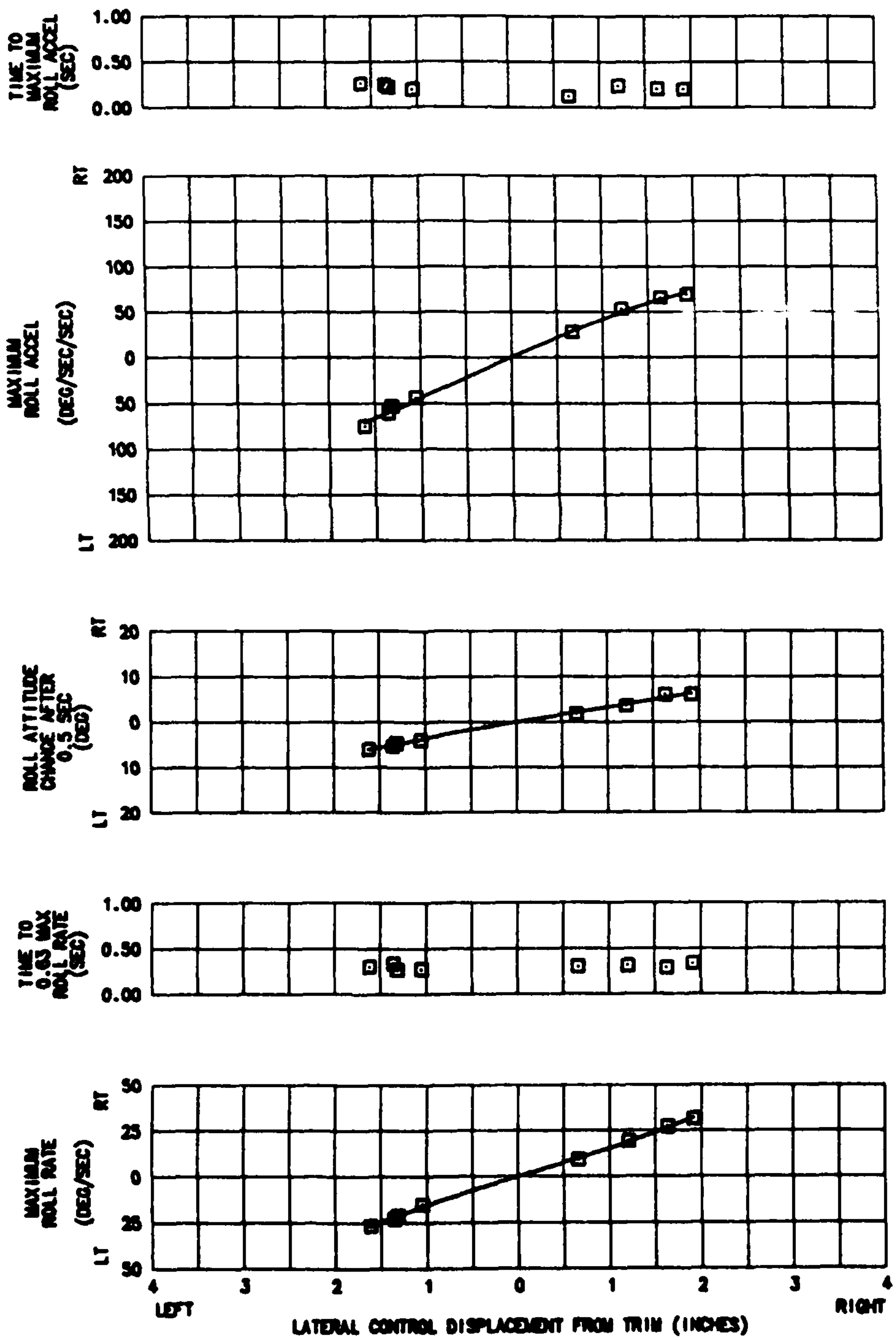


FIGURE E-124
LATERAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	(BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3070	100.4(MID)	4.2(RT)	7020	23.5	477	64

NOTES: 1. ASYMM. CONFIG. 2
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

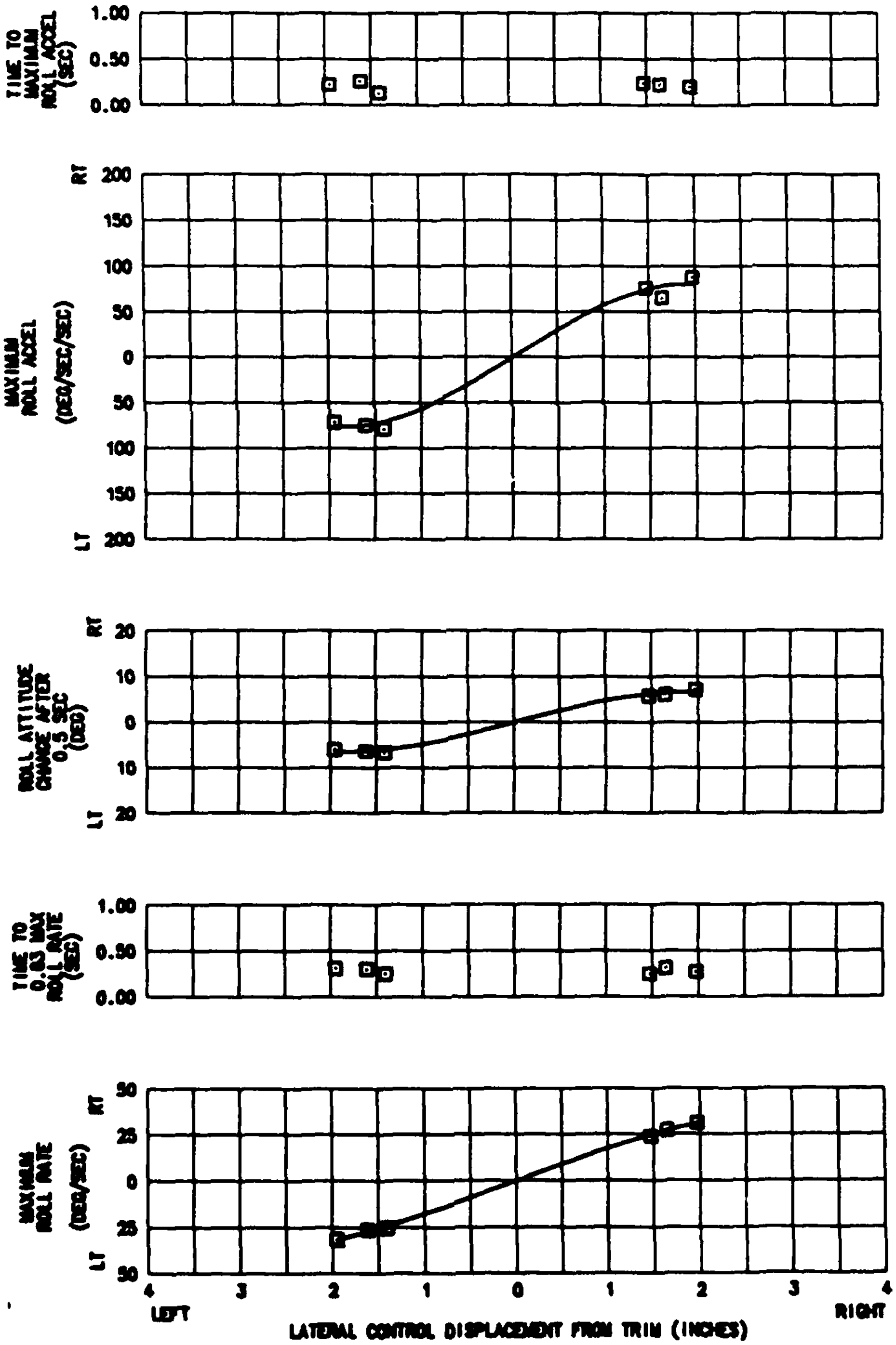


FIGURE E-125
LATERAL CONTROLLABILITY
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	(BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KTS)
3050	100.4(MID)	4.2(RT)	6420	25.0	477	83

NOTES: 1. ASYMM. CONFIG. 2
2. TRIM FLIGHT CONDITION: LEVEL FLIGHT

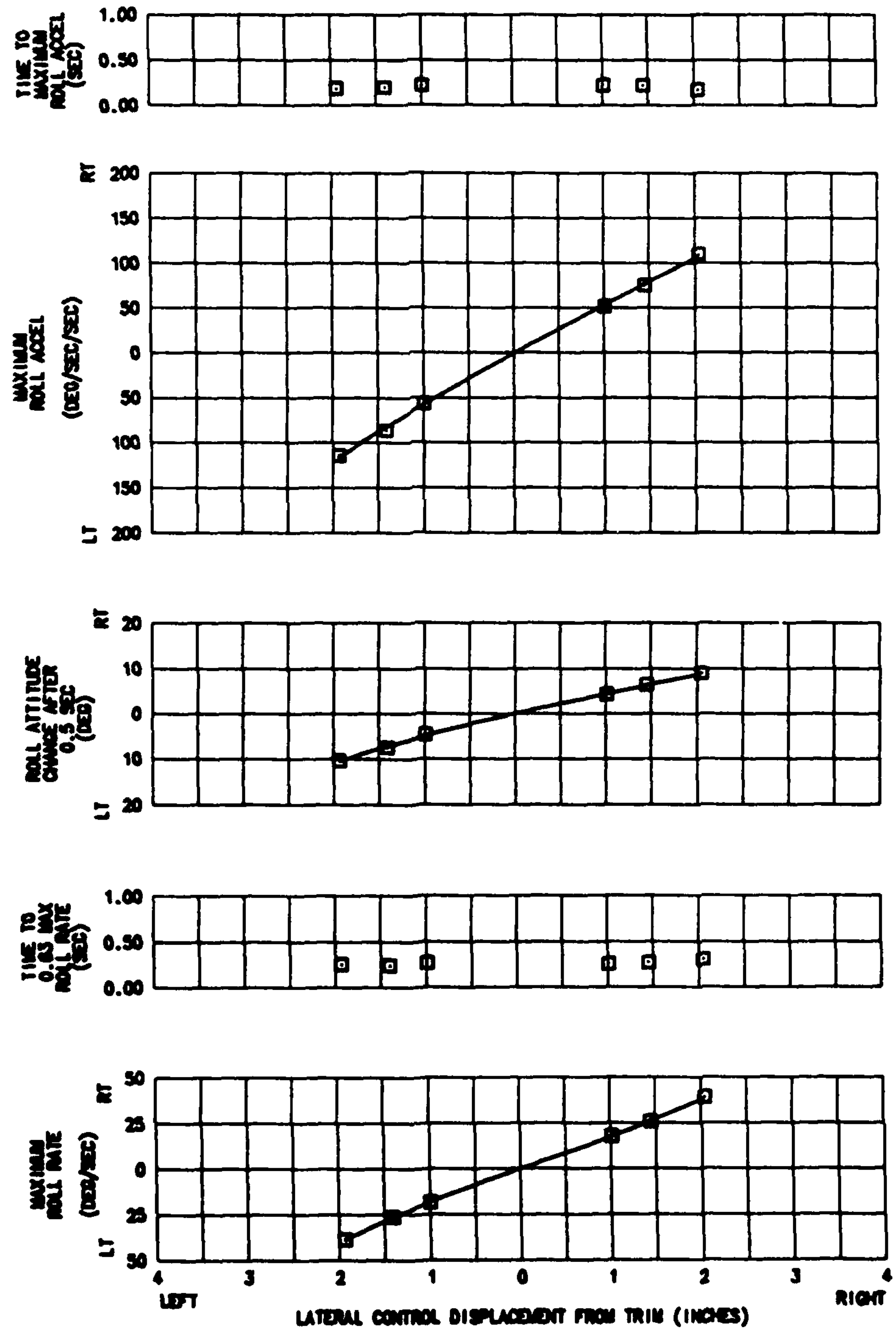


FIGURE E-126

CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
2930	101.4(MID)	2400	13.0	476	5	10

NOTES:
1. EPS EMPTY
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

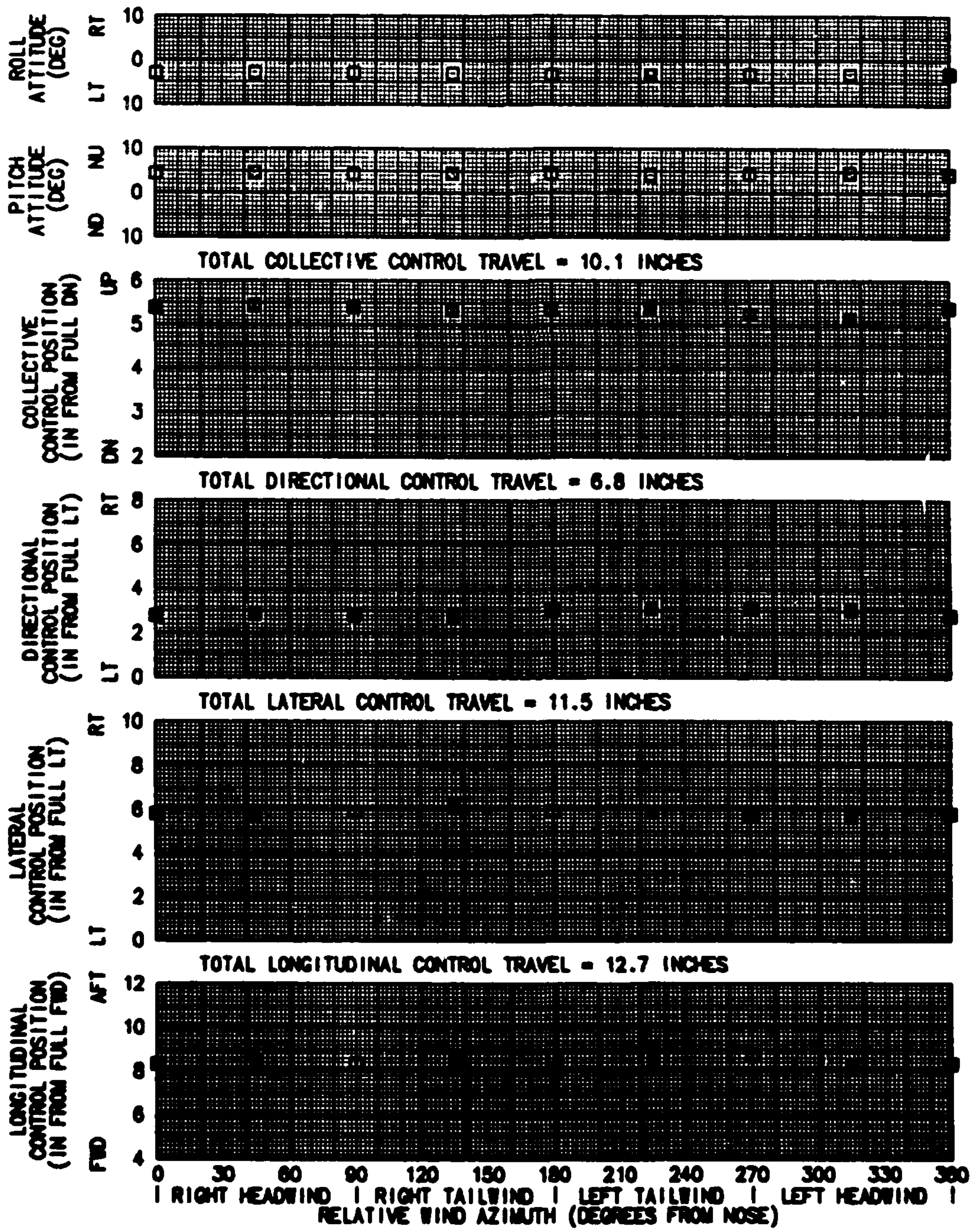


FIGURE E-127
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
2920	101.5(MID)	2420	13.0	476	10	10

NOTES:
1. EPS EMPTY
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

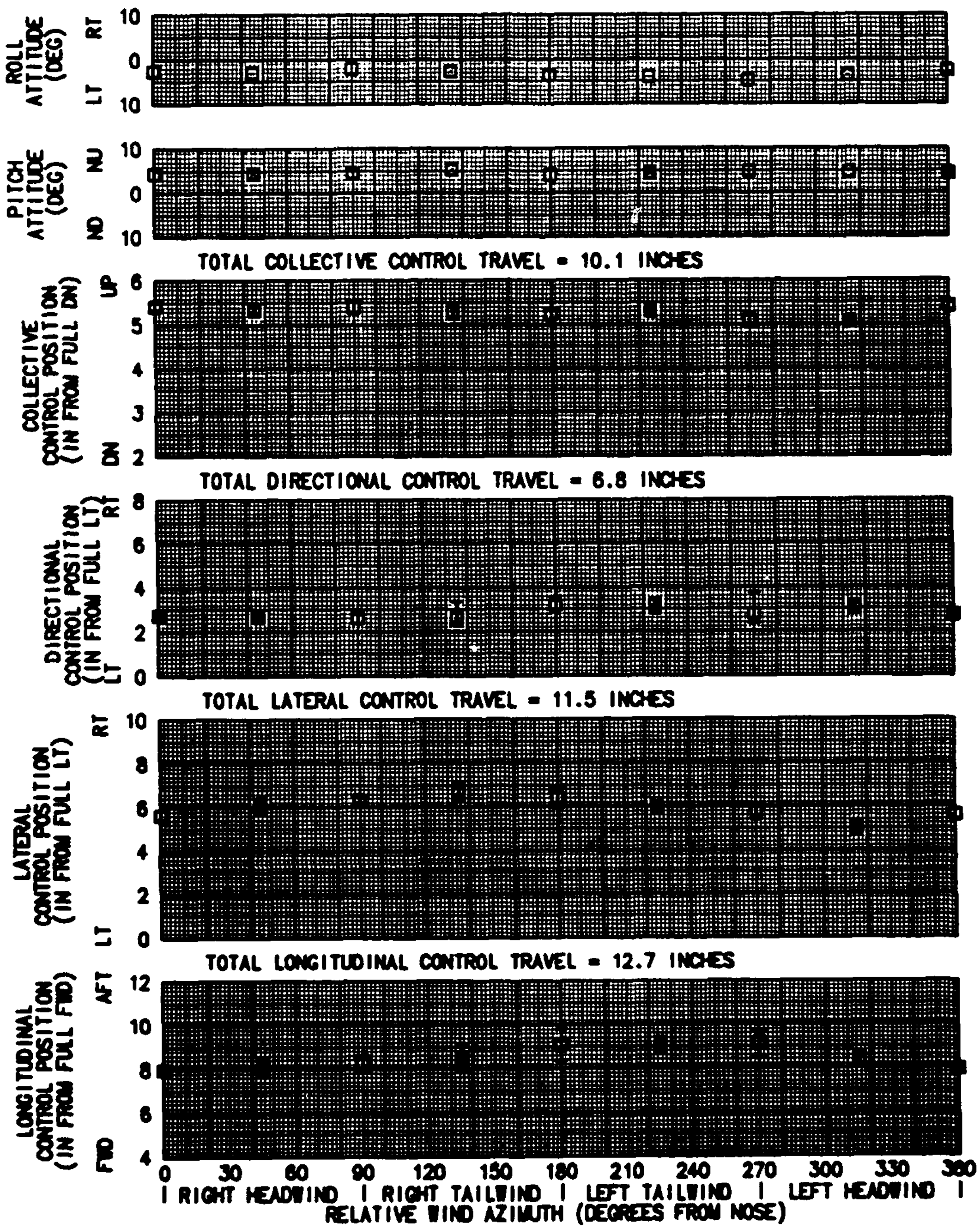


FIGURE E-128
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
2920	101.5(MID)	2400	12.5	476	15	10

NOTES: 1. EPS EMPTY
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

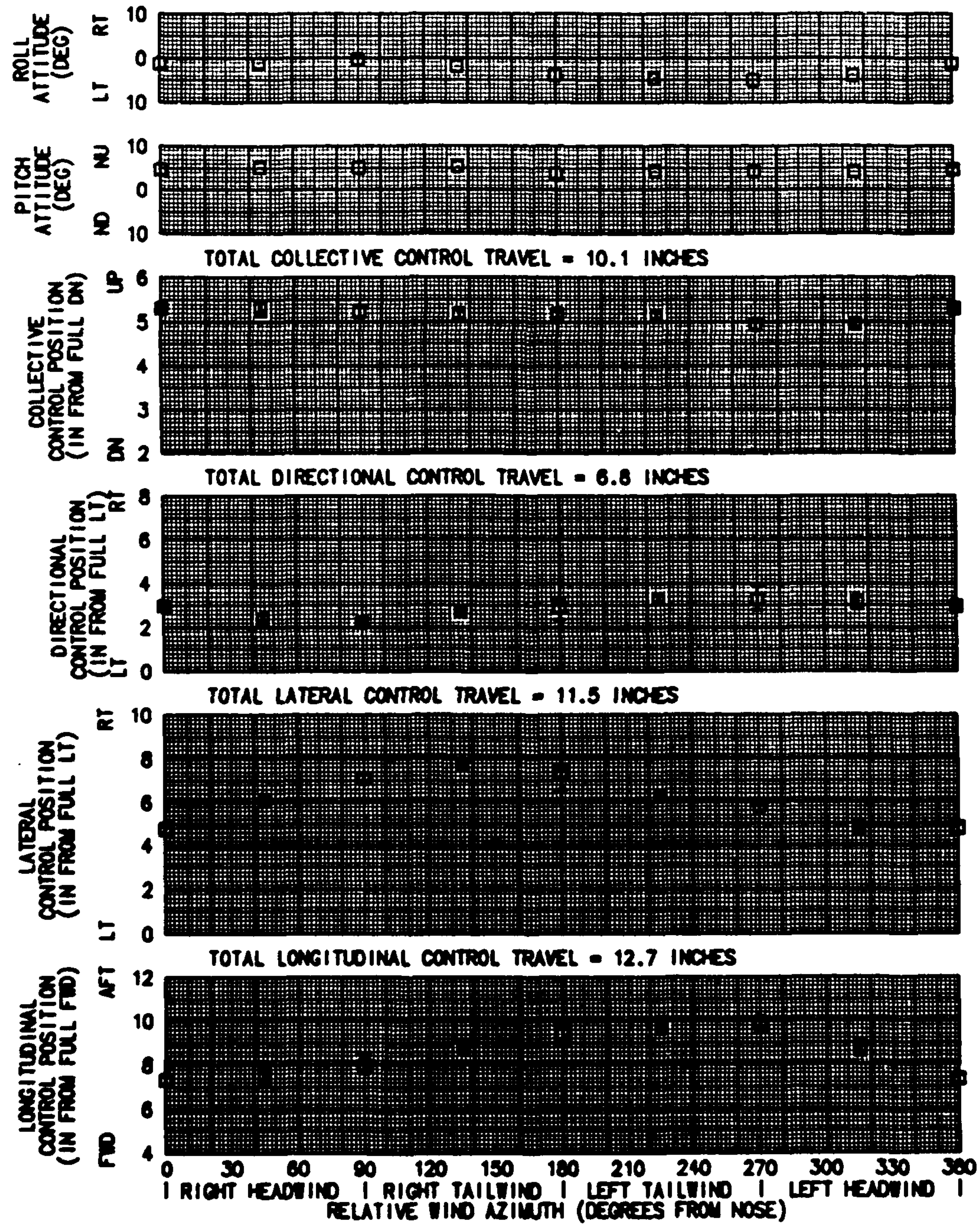


FIGURE E-129

CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
2910	101.5(MID)	2420	13.0	476	20	10

NOTES:
1. EPS EMPTY
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

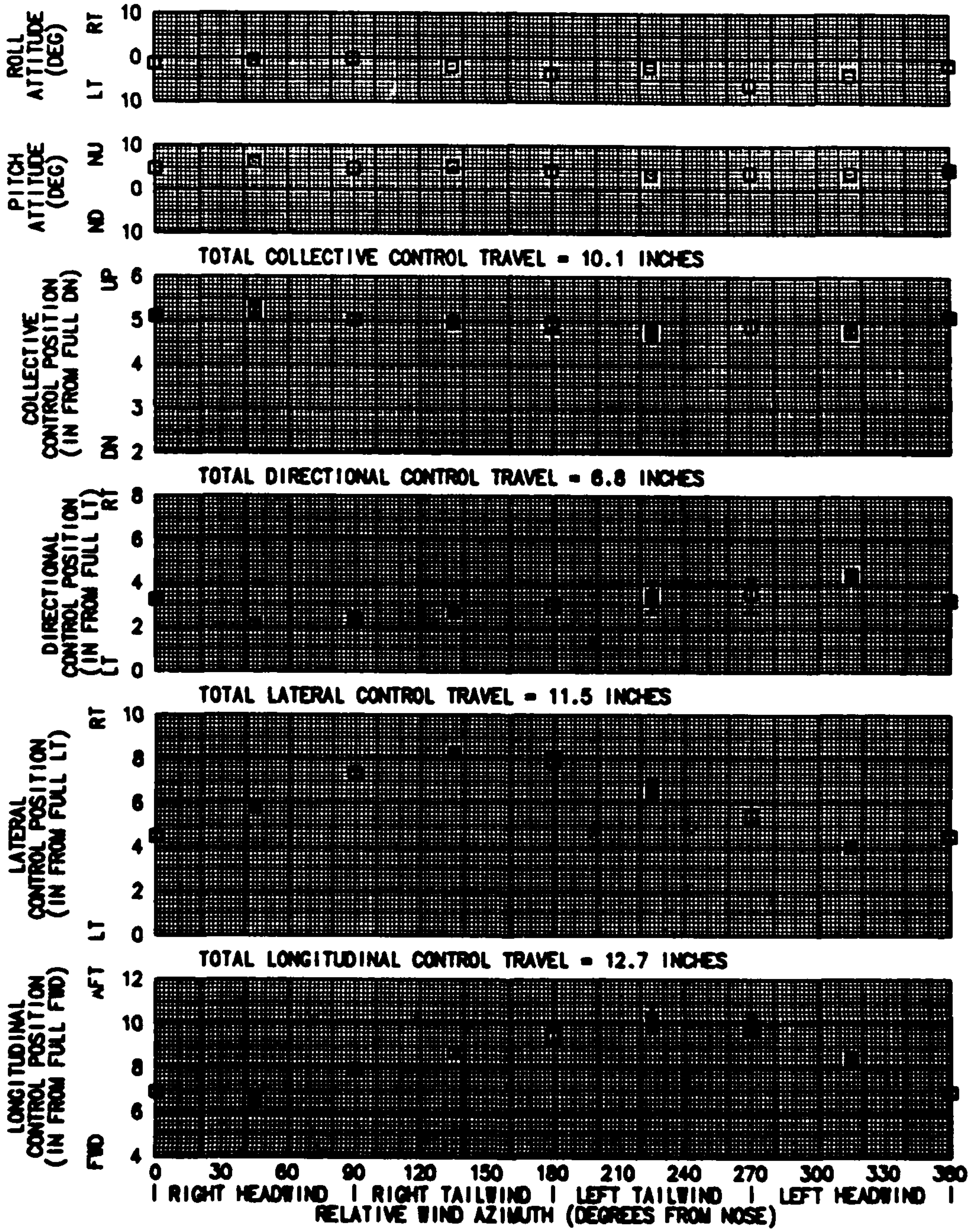


FIGURE E-130
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
2910	101.5(MID)	2440	14.0	476	25	10

NOTES:
1. EPS EMPTY
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

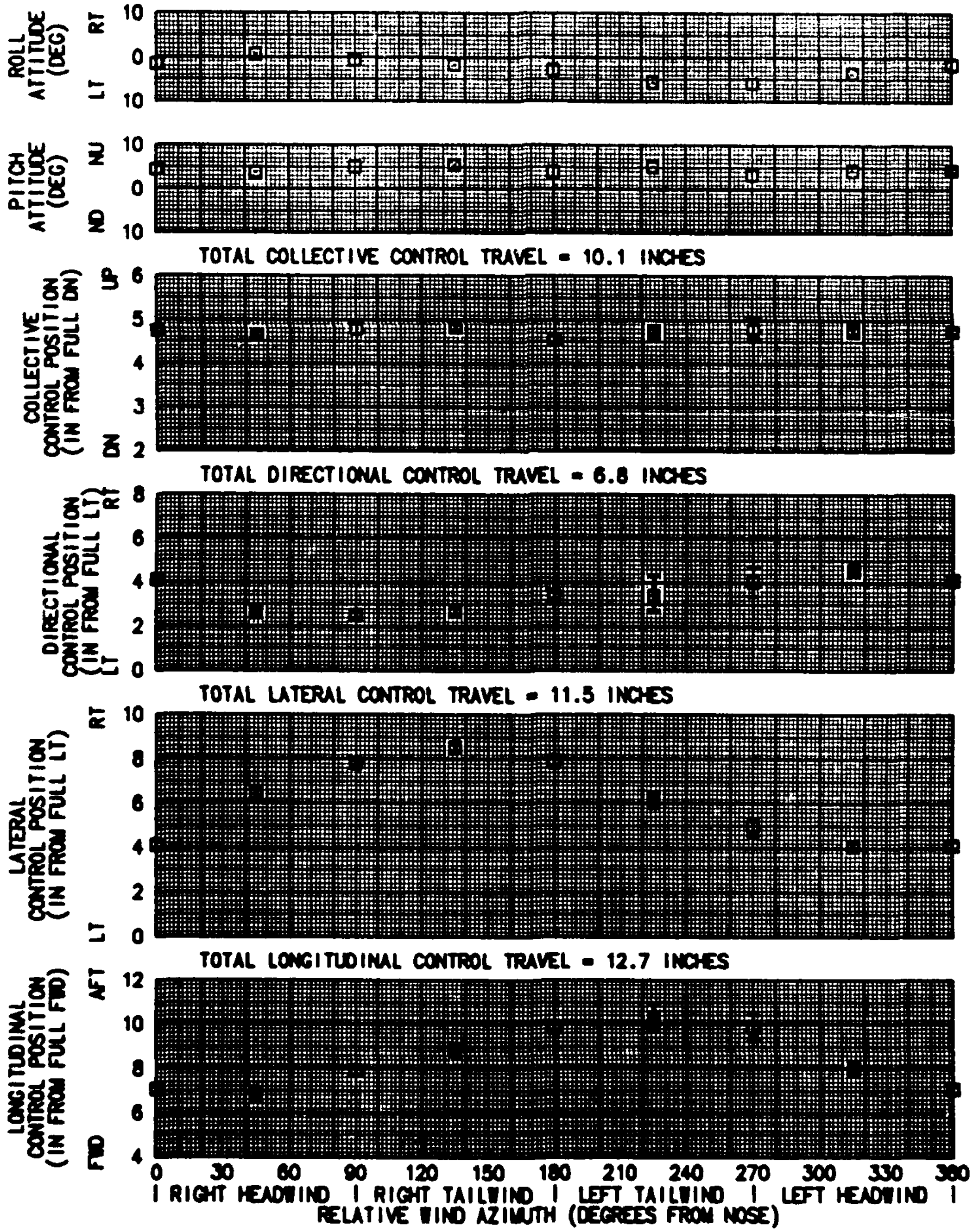


FIGURE E-131
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
2900	101.5(MID)	2450	14.0	476	30	10

NOTES:
1. EPS EMPTY
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

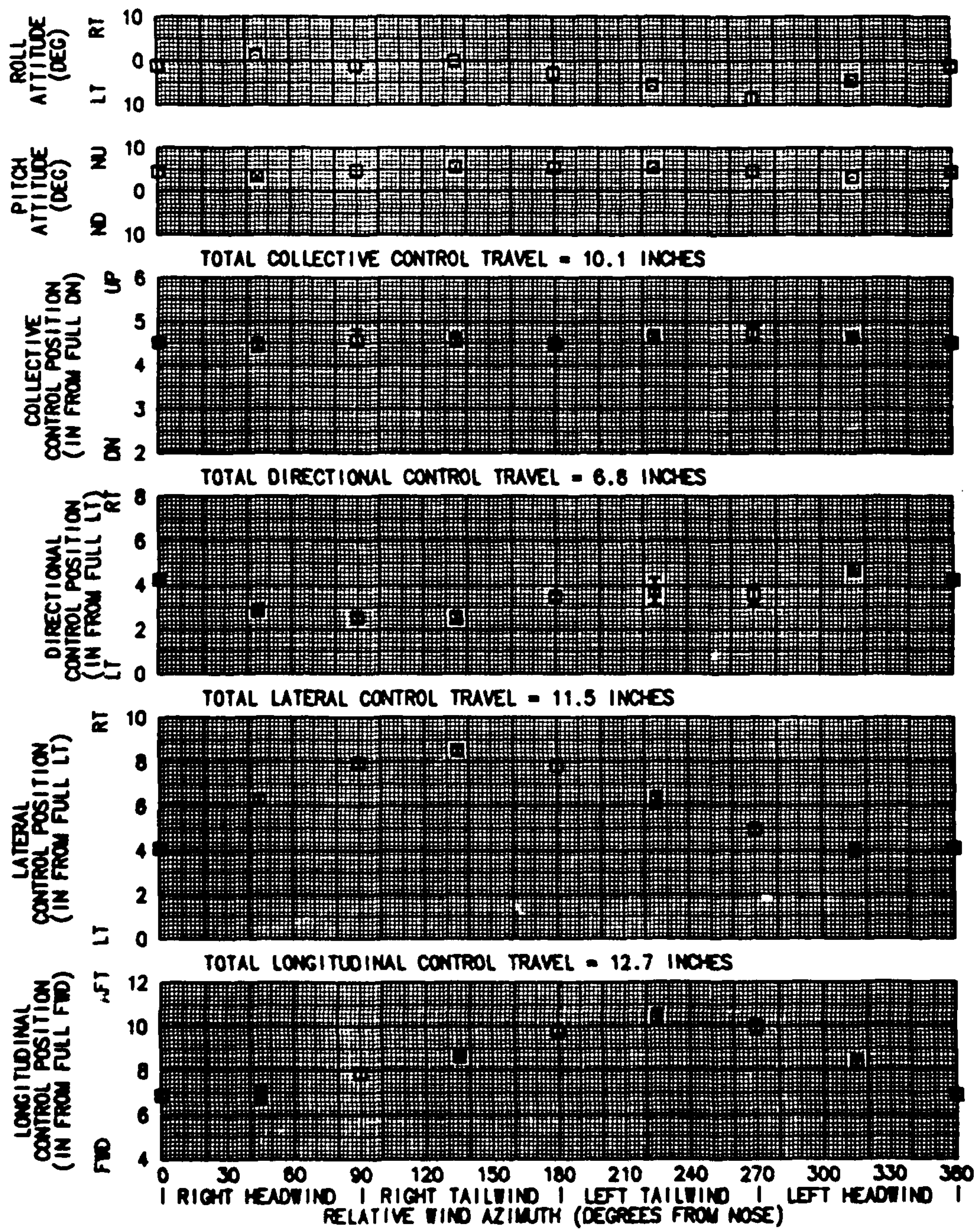


FIGURE E-132
LOW SPEED FORWARD AND REARWARD FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
2960	101.4(MID)	2330	13.0	476	10

NOTES: 1. EPS EMPTY
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

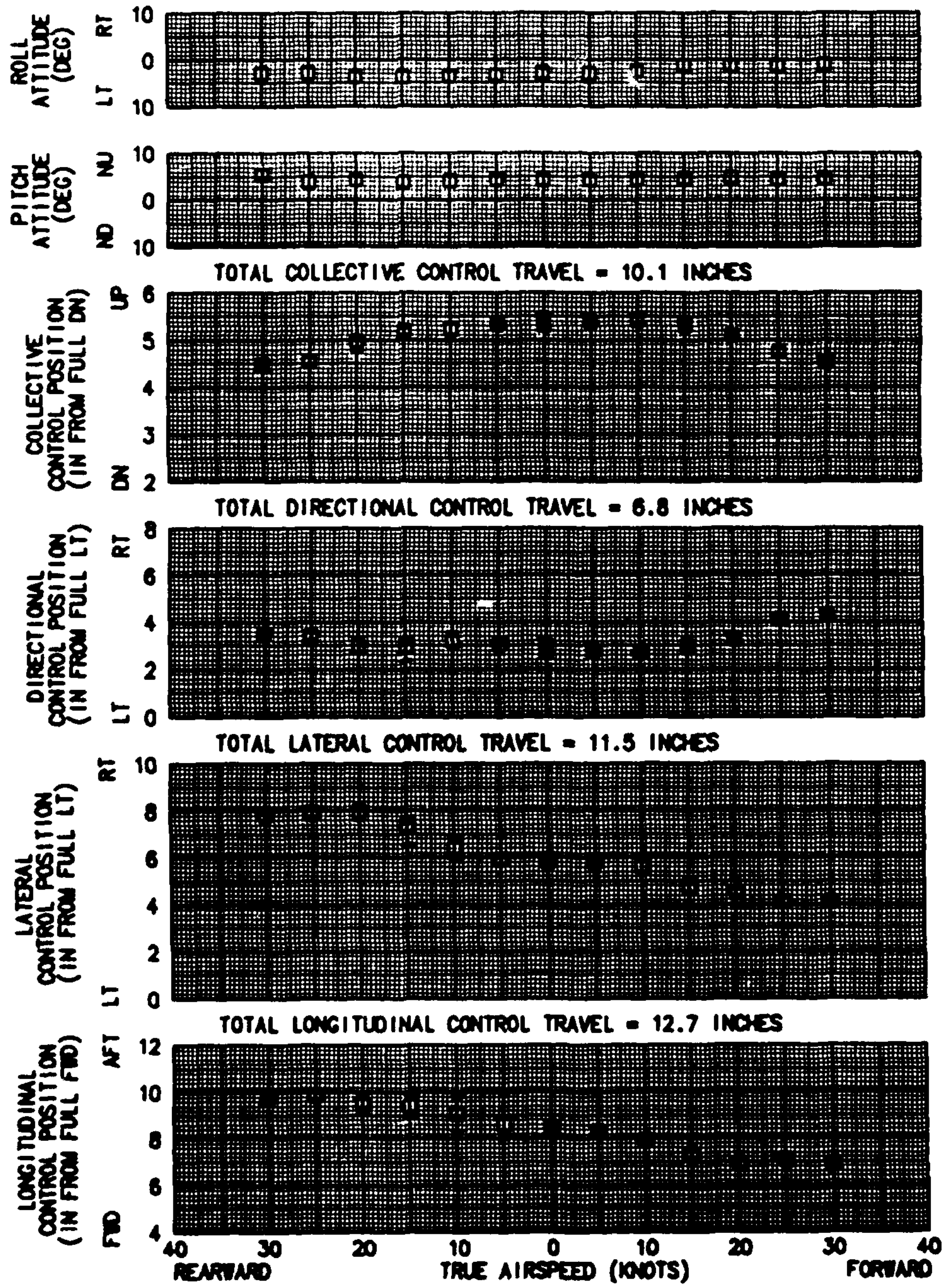


FIGURE E-133
LOW SPEED LEFT AND RIGHT SIDEWARD FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
2890	101.5(MID)	2450	13.0	476	10

NOTES:
1. EPS EMPTY
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

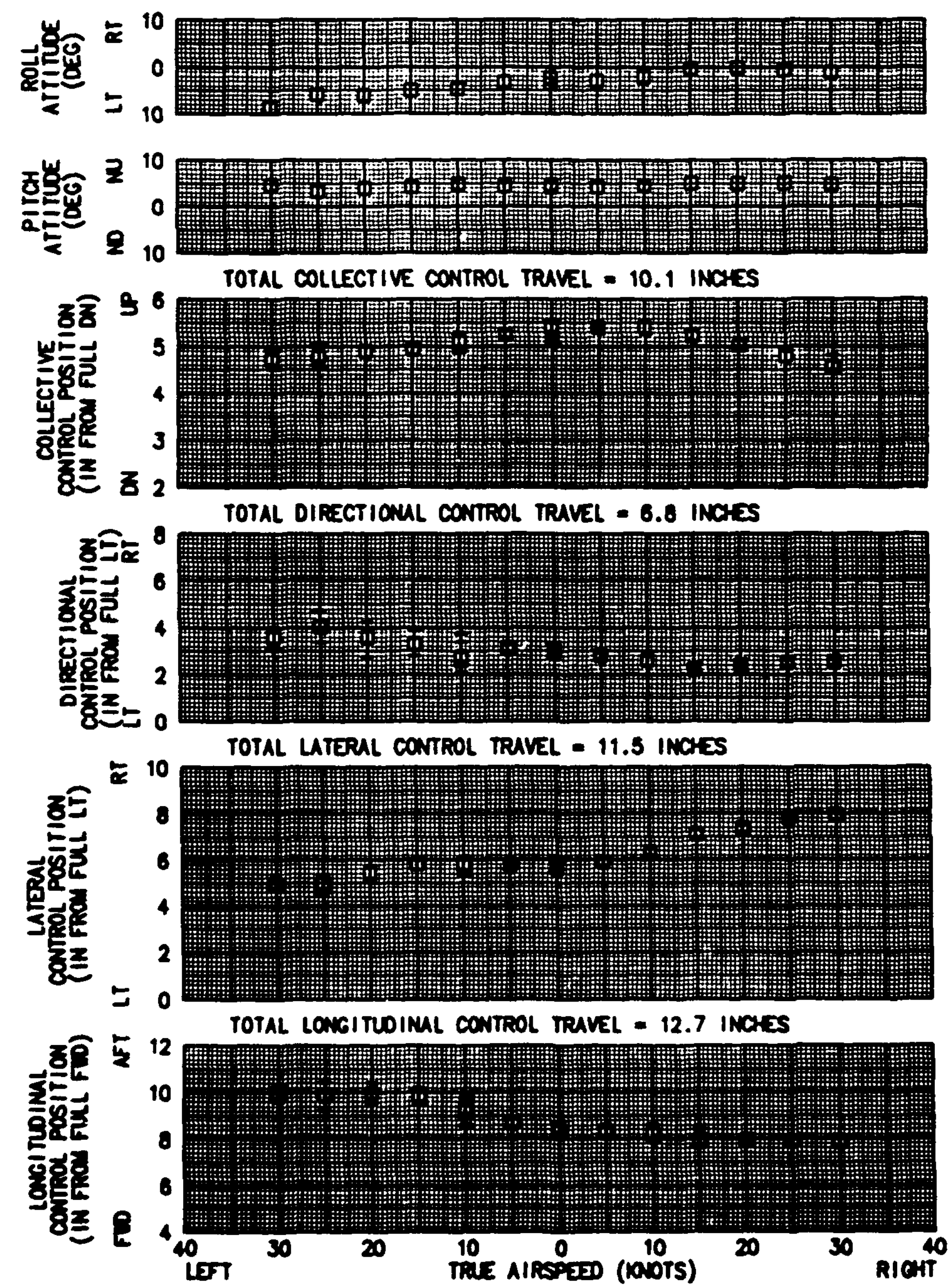


FIGURE E-134
LOW SPEED 45 AND 225 AZIMUTH FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
2940	101.4(MID)	2380	13.0	478	10

NOTES: 1. EPS EMPTY
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

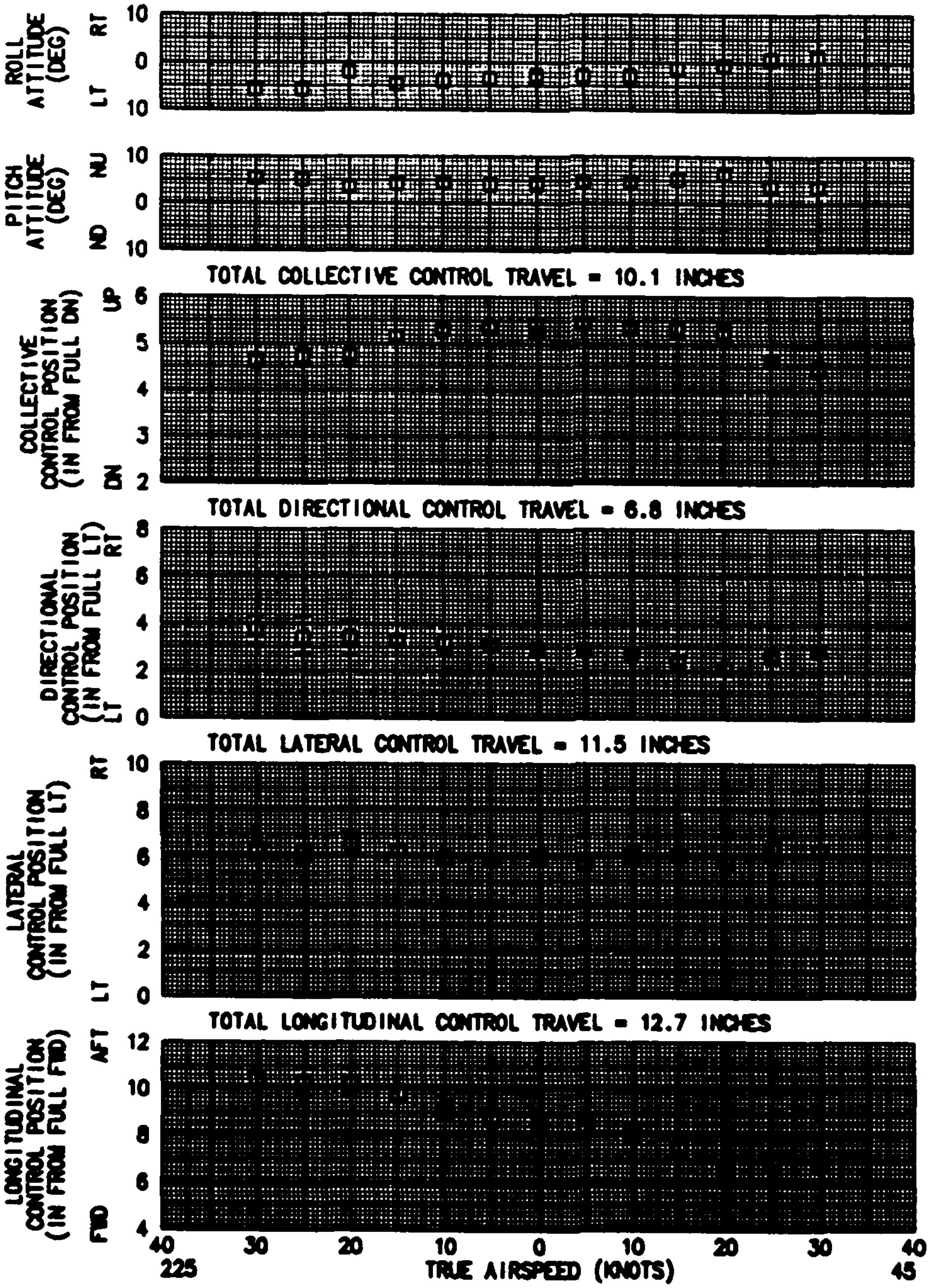


FIGURE E-135
LOW SPEED 315 AND 135 AZIMUTH FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
2870	101.5(MID)	2530	14.0	476	10

NOTES: 1. EPS EMPTY
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

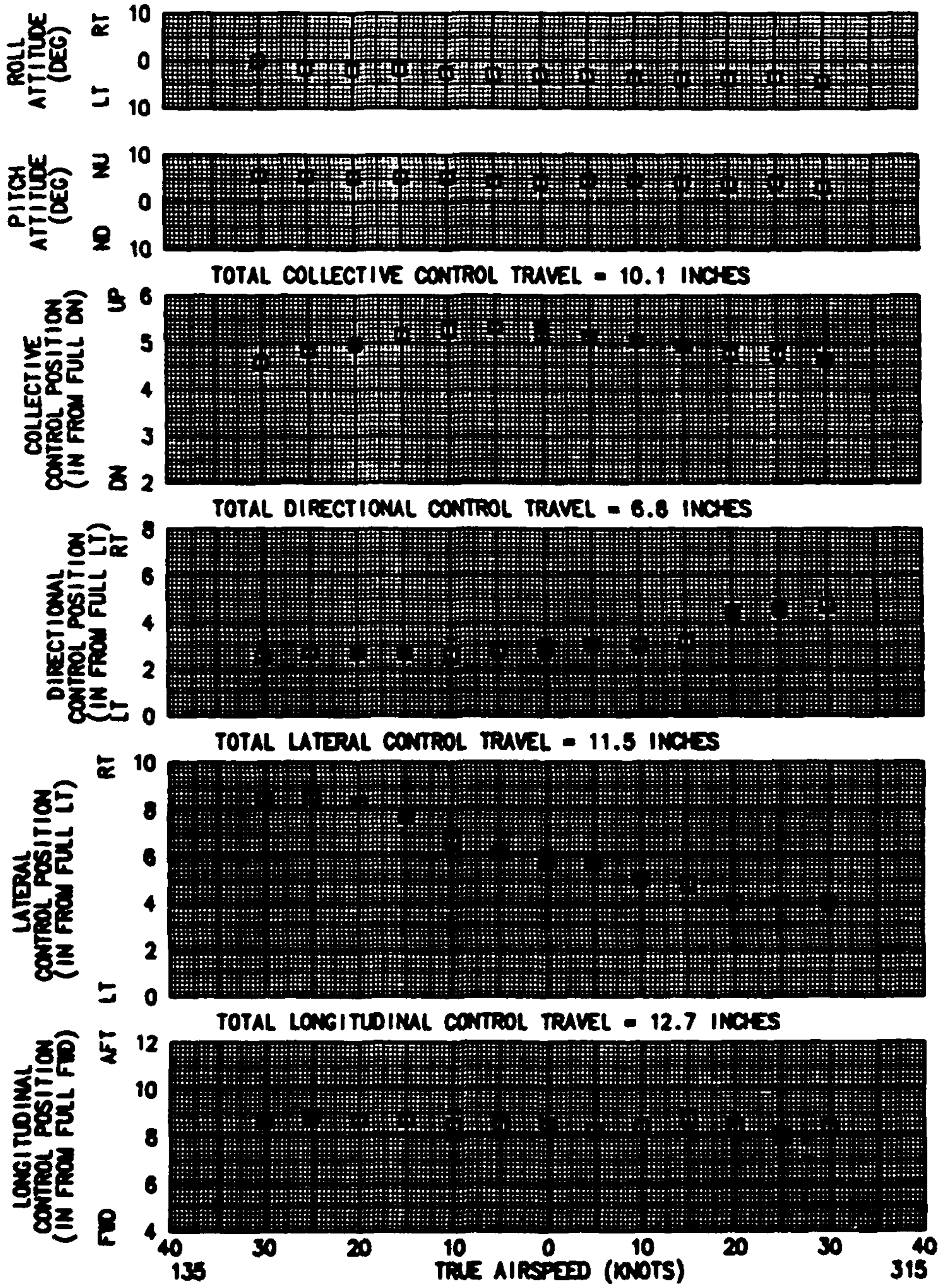


FIGURE E-136
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3250	102.0(MID)	2950	17.5	477	5	10

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

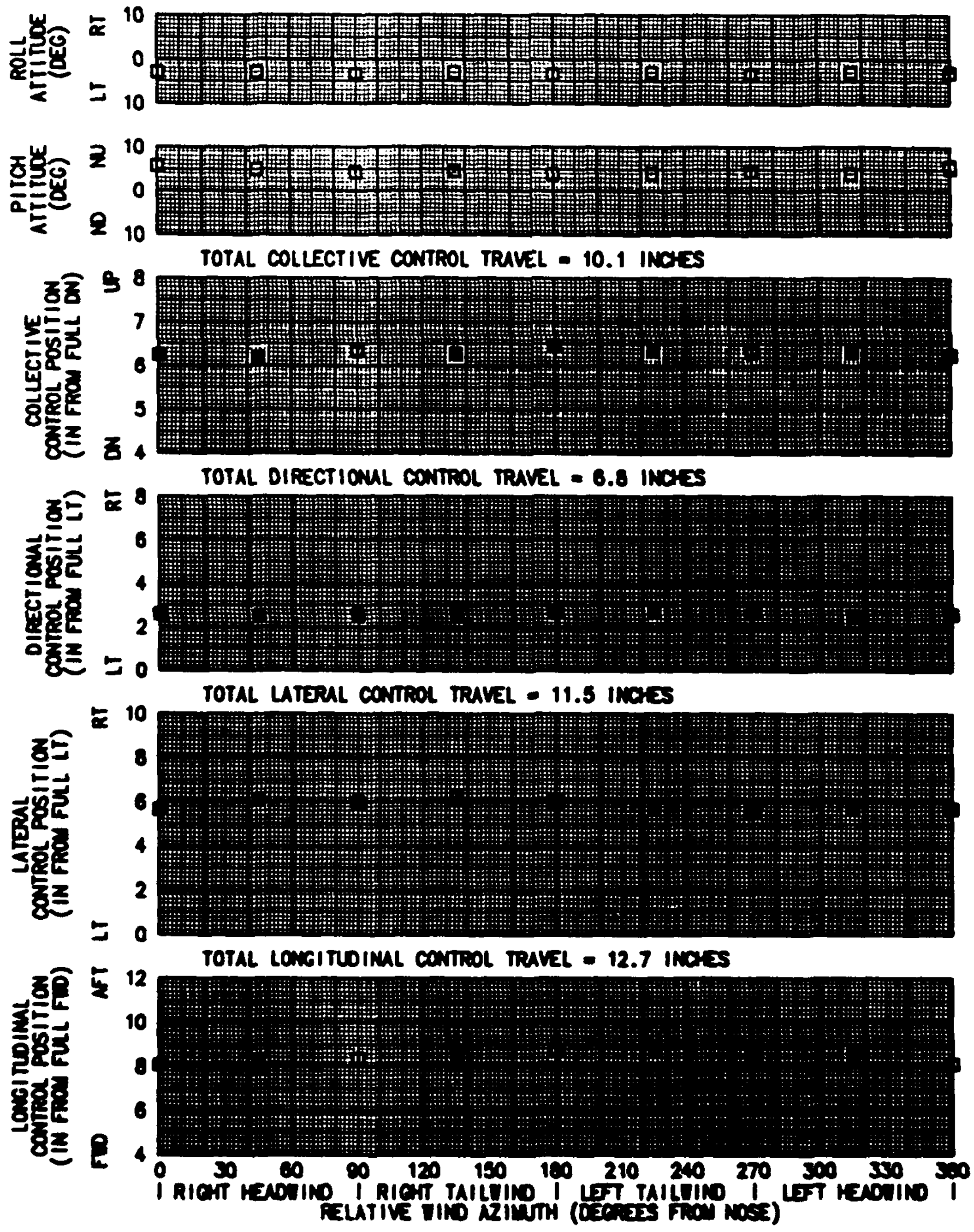


FIGURE E-137

CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3250	102.0(MID)	2950	17.5	477	10	10

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

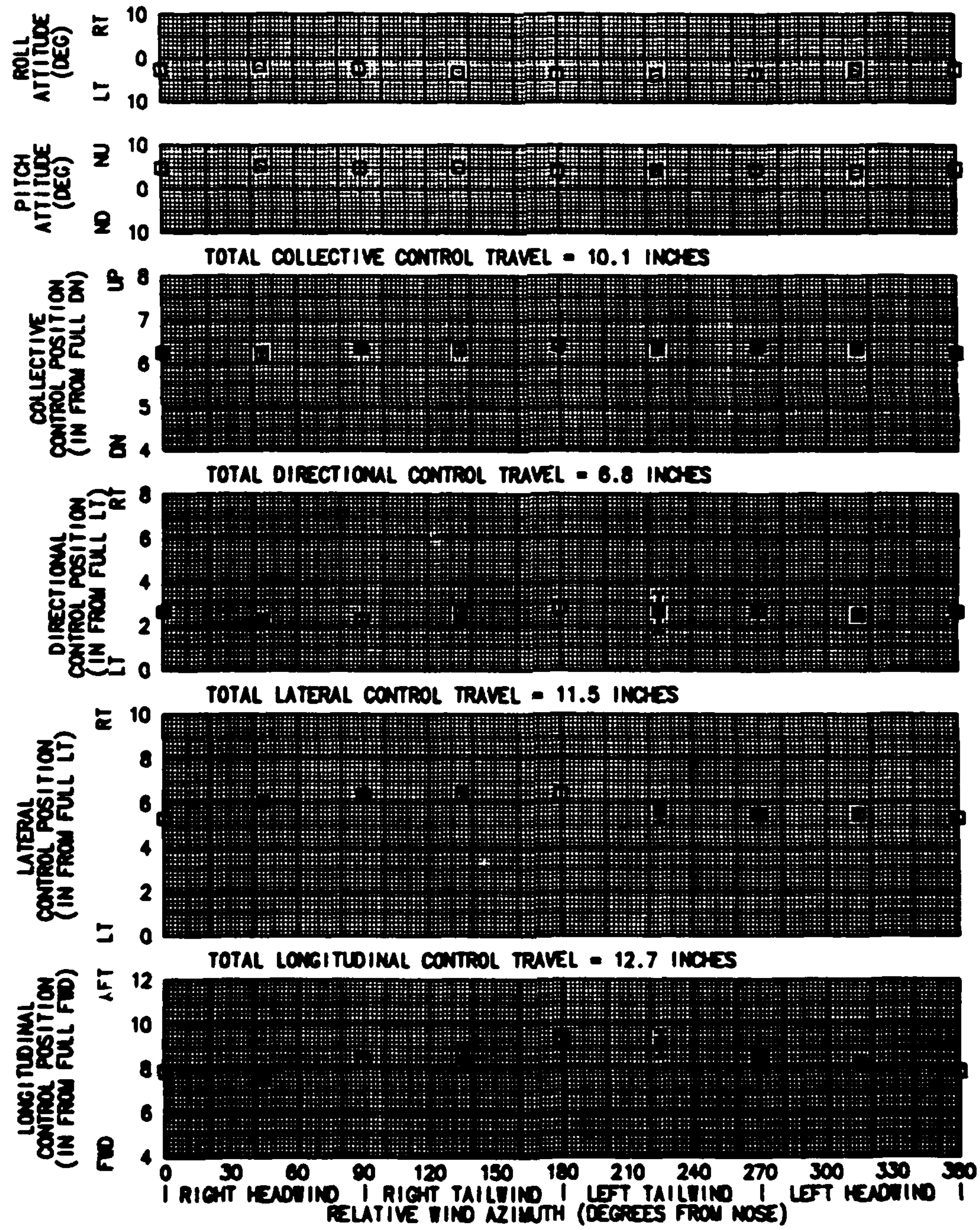


FIGURE E-138
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3240	102.0(MID)	2980	17.5	477	15	10

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

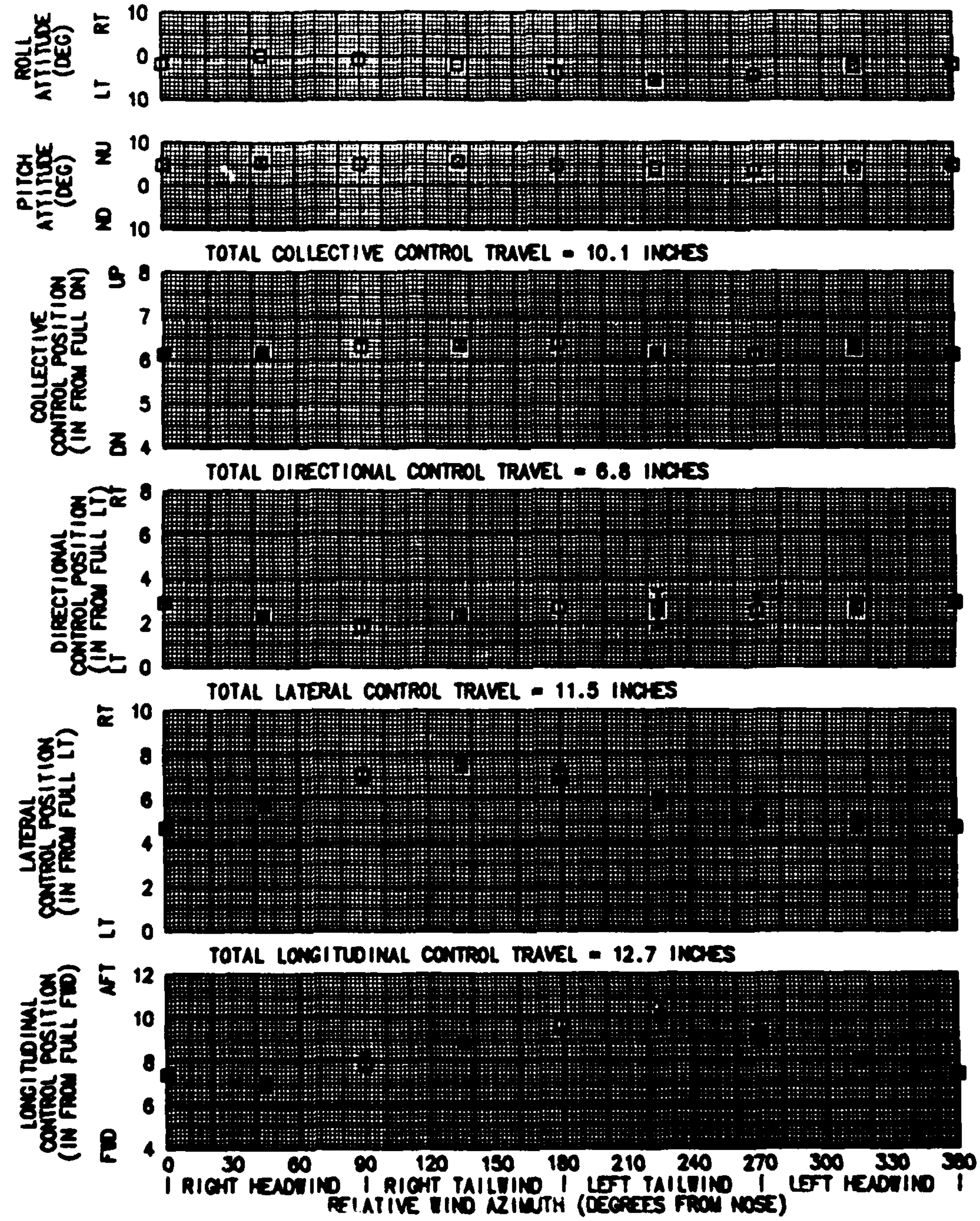


FIGURE E-139
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3240	102.0(MID)	2980	17.0	477	20	10

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

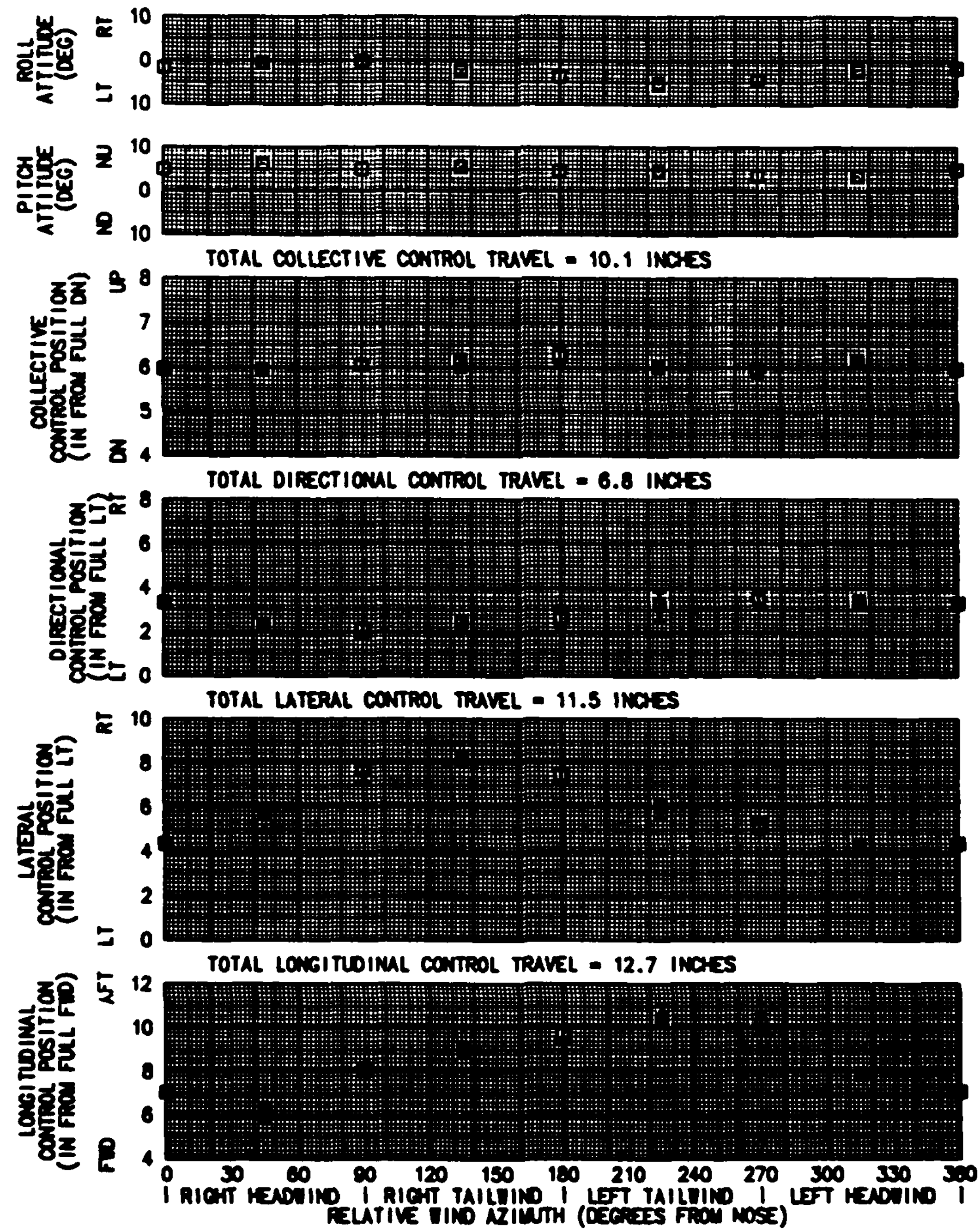


FIGURE E-140
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3240	102.0(MID)	2980	17.0	477	25	10

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

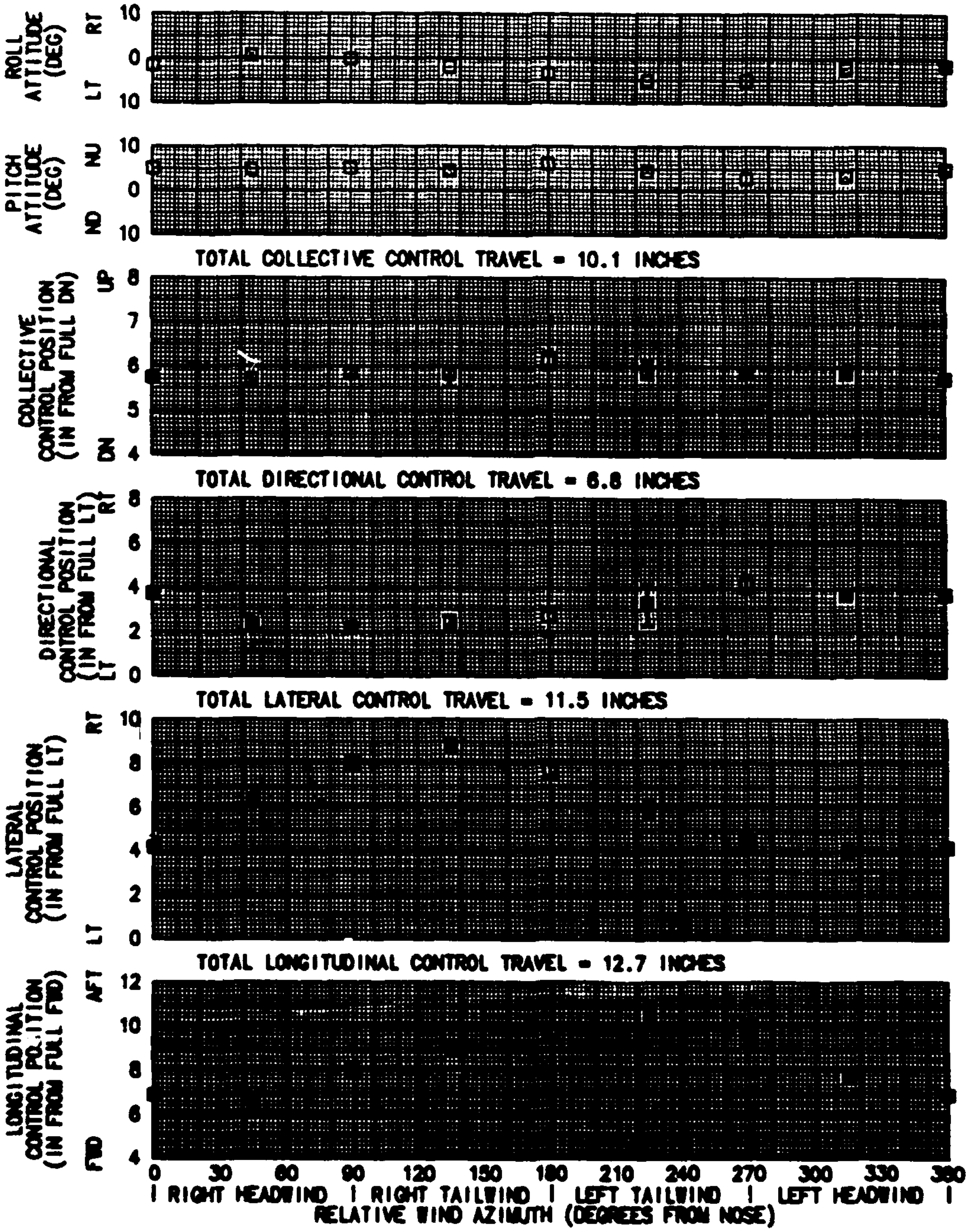


FIGURE E-141

CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3230	102.0(MID)	2980	17.0	477	30	10

NOTES:
1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

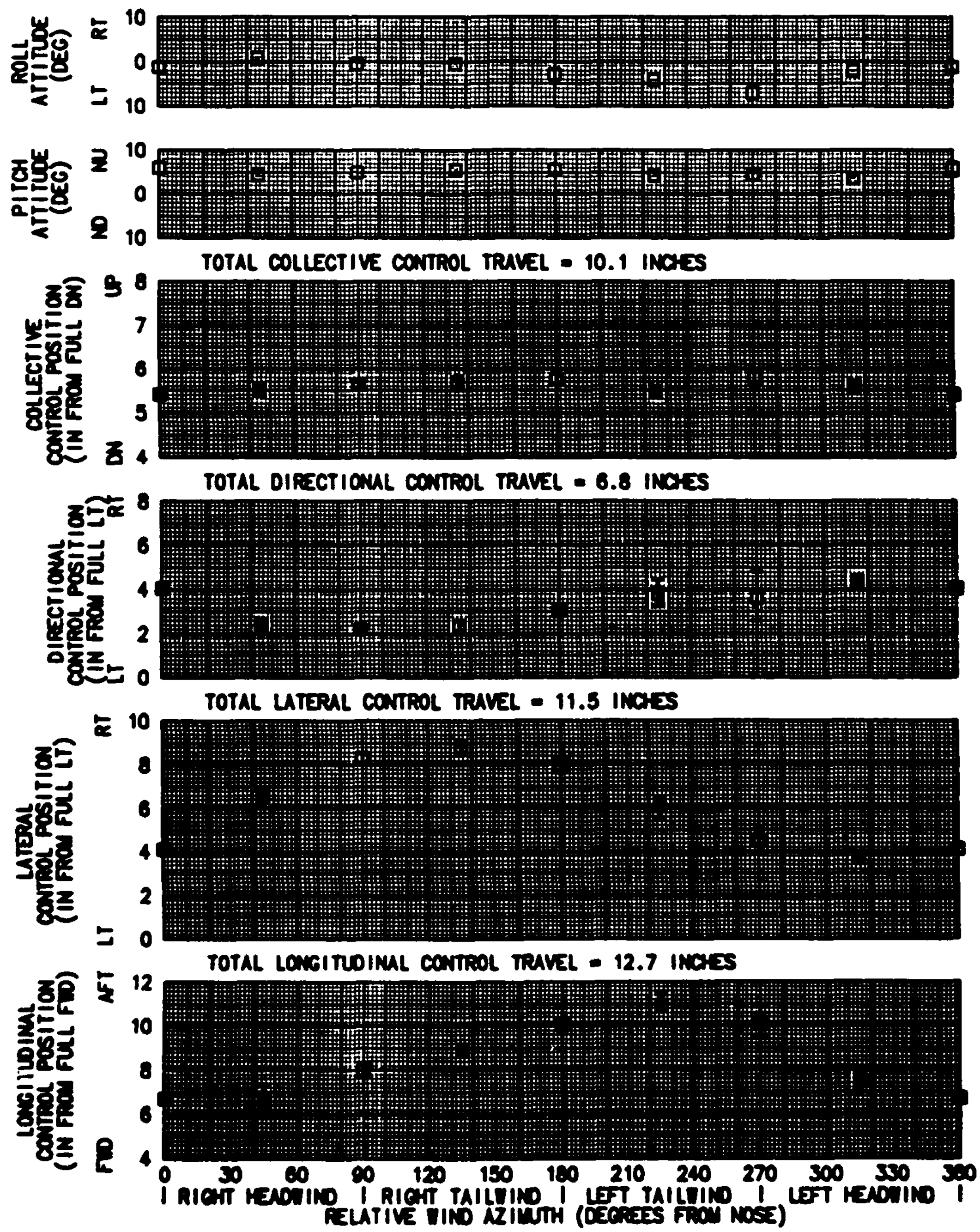


FIGURE E-142
LOW SPEED FORWARD AND REARWARD FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
3300	101.9(MID)	2890	17.0	477	10

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

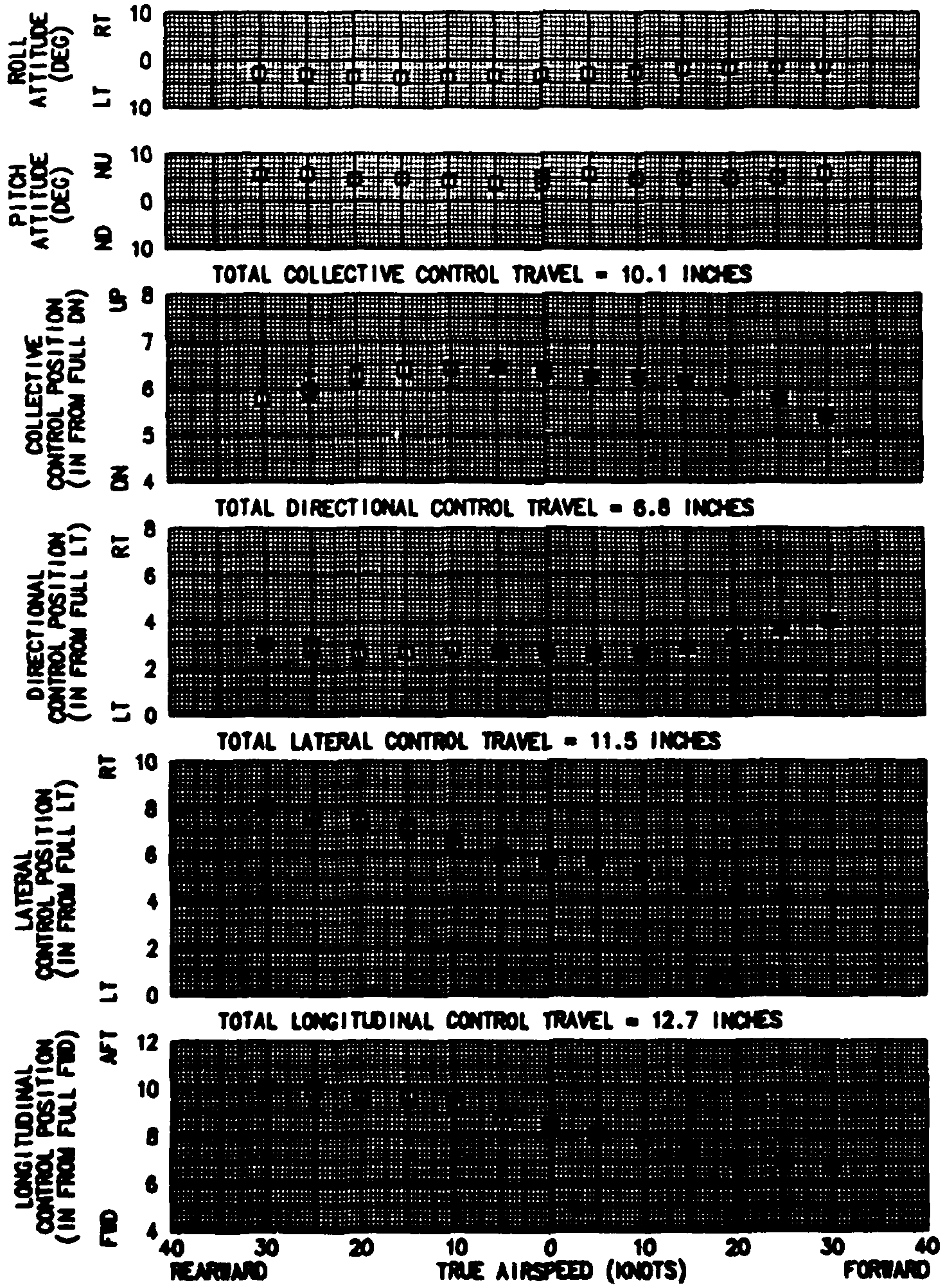


FIGURE E-143
LOW SPEED LEFT AND RIGHT SIDEWARD FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
3230	101.9(MID)	2980	17.0	477	10

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

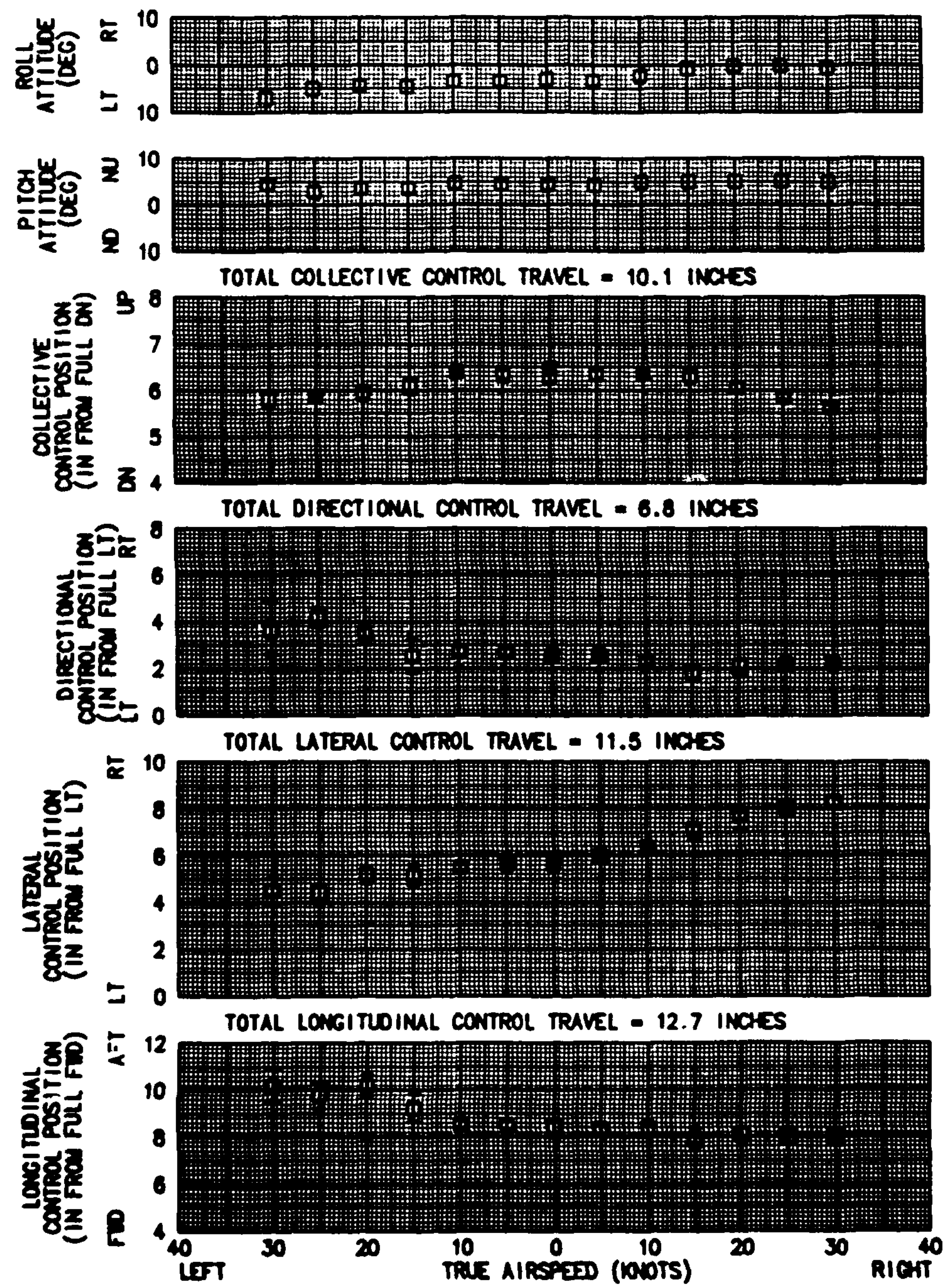


FIGURE E-144
LOW SPEED 45 AND 225 AZIMUTH FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
3260	101.9(MID)	2930	16.5	477	10

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

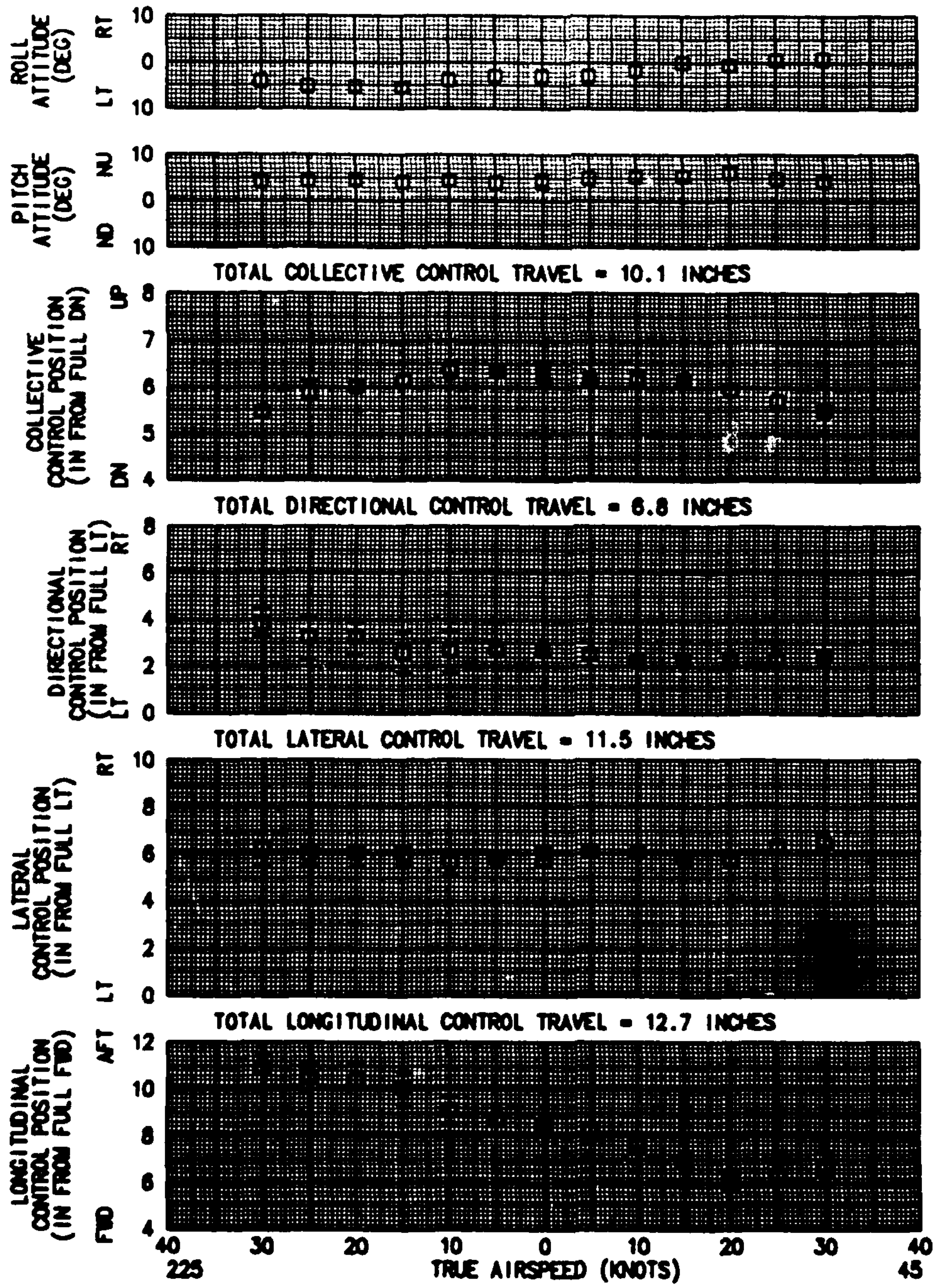


FIGURE E-145
LOW SPEED 315 AND 135 AZIMUTH FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
3180	102.1(MID)	3090	19.0	477	10

NOTES: 1. UNIV. MOUNT WITH TWO 19-SHOT ROCKET LAUNCHERS
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

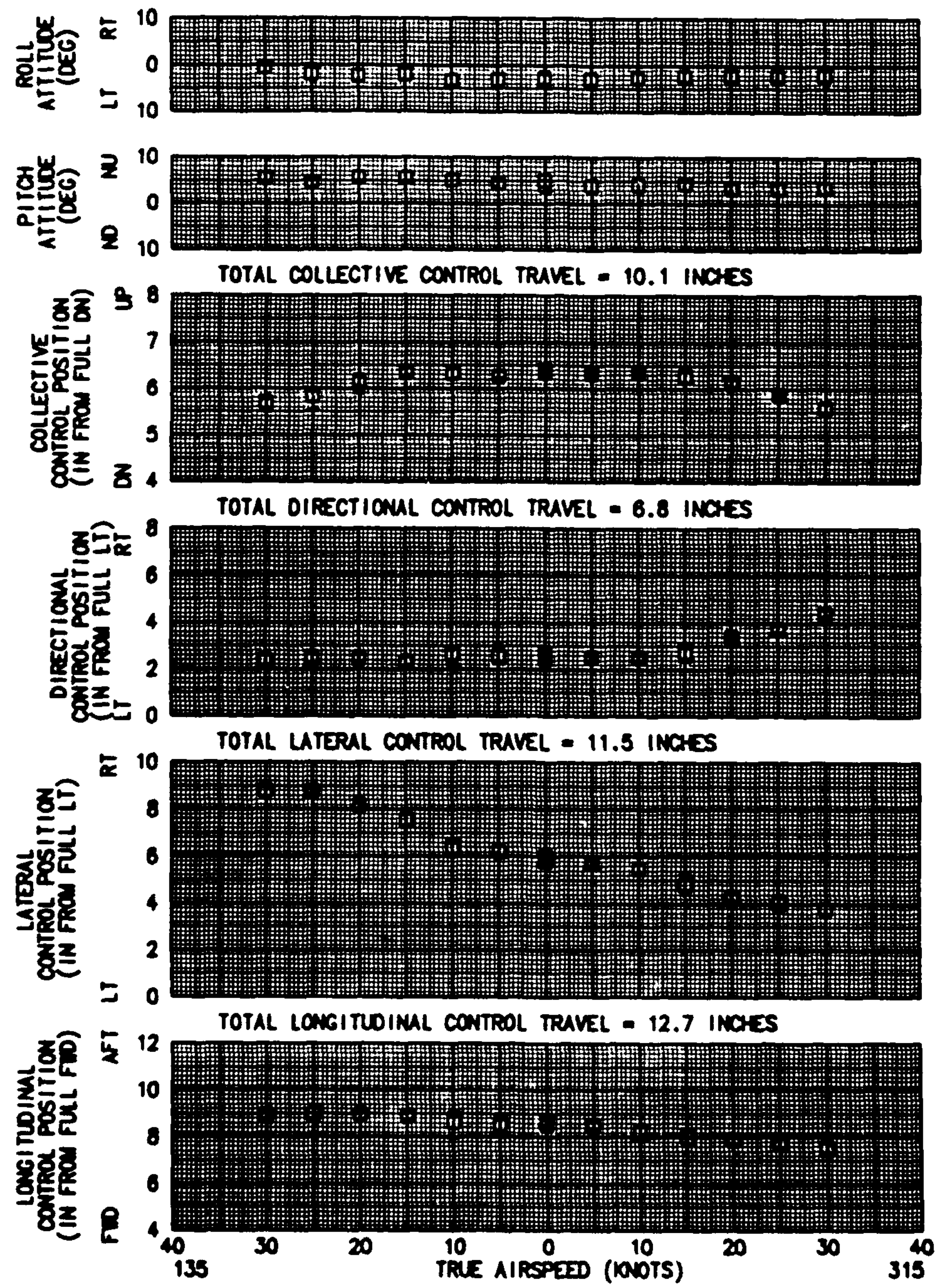


FIGURE E-146

CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	AVG CG LOCATION LAT (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3100	100.6(MID)	-4.1(LT)	3820	25.5	477	5	10

NOTES:
1. CONFIG. 2, LEFT ASYMM.
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

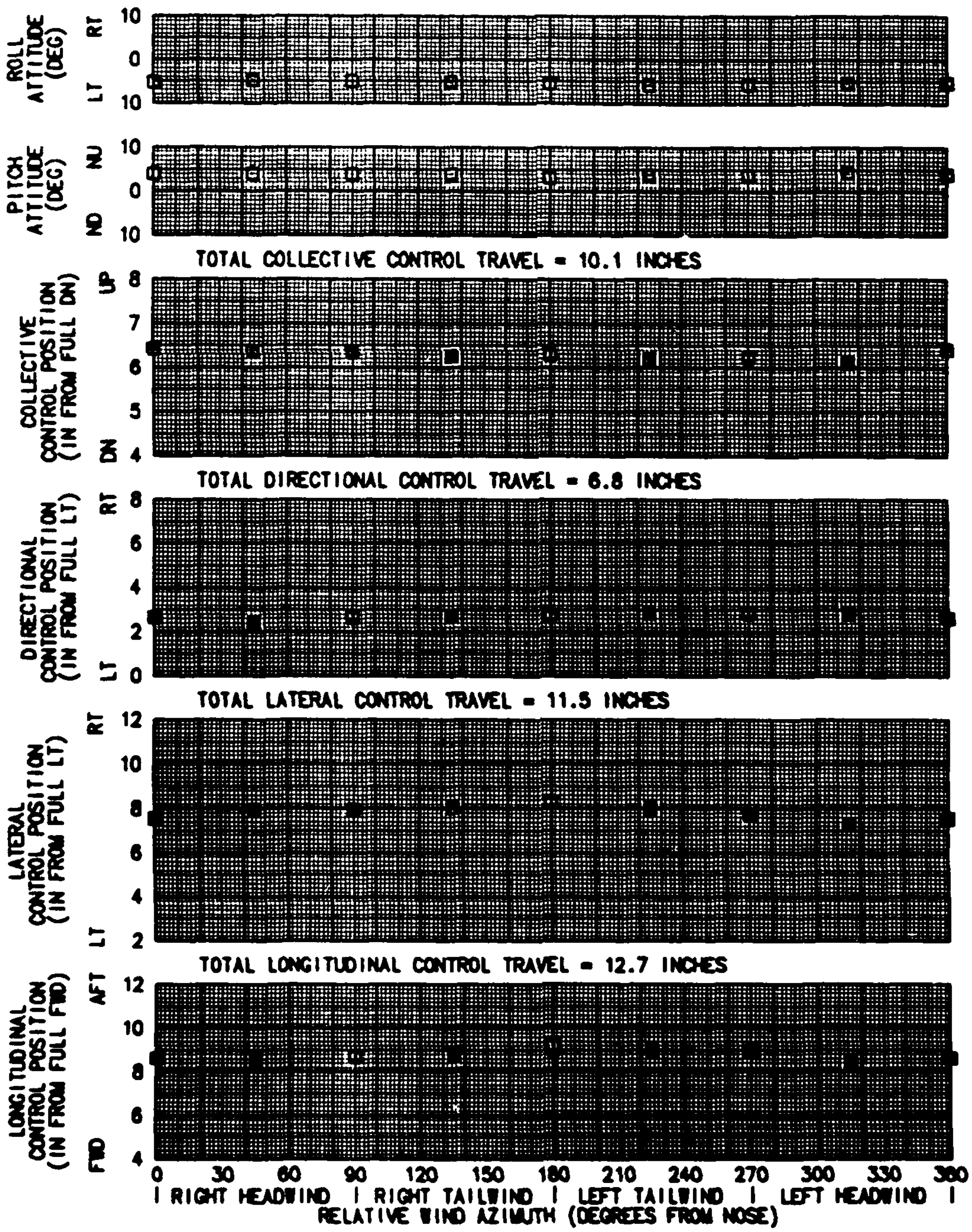


FIGURE E-147
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	LAT (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3100	100.6(MID)	-4.1(LT)	3820	25.5	477	10	10

NOTES: 1. CONFIG. 2, LEFT ASYMM.
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

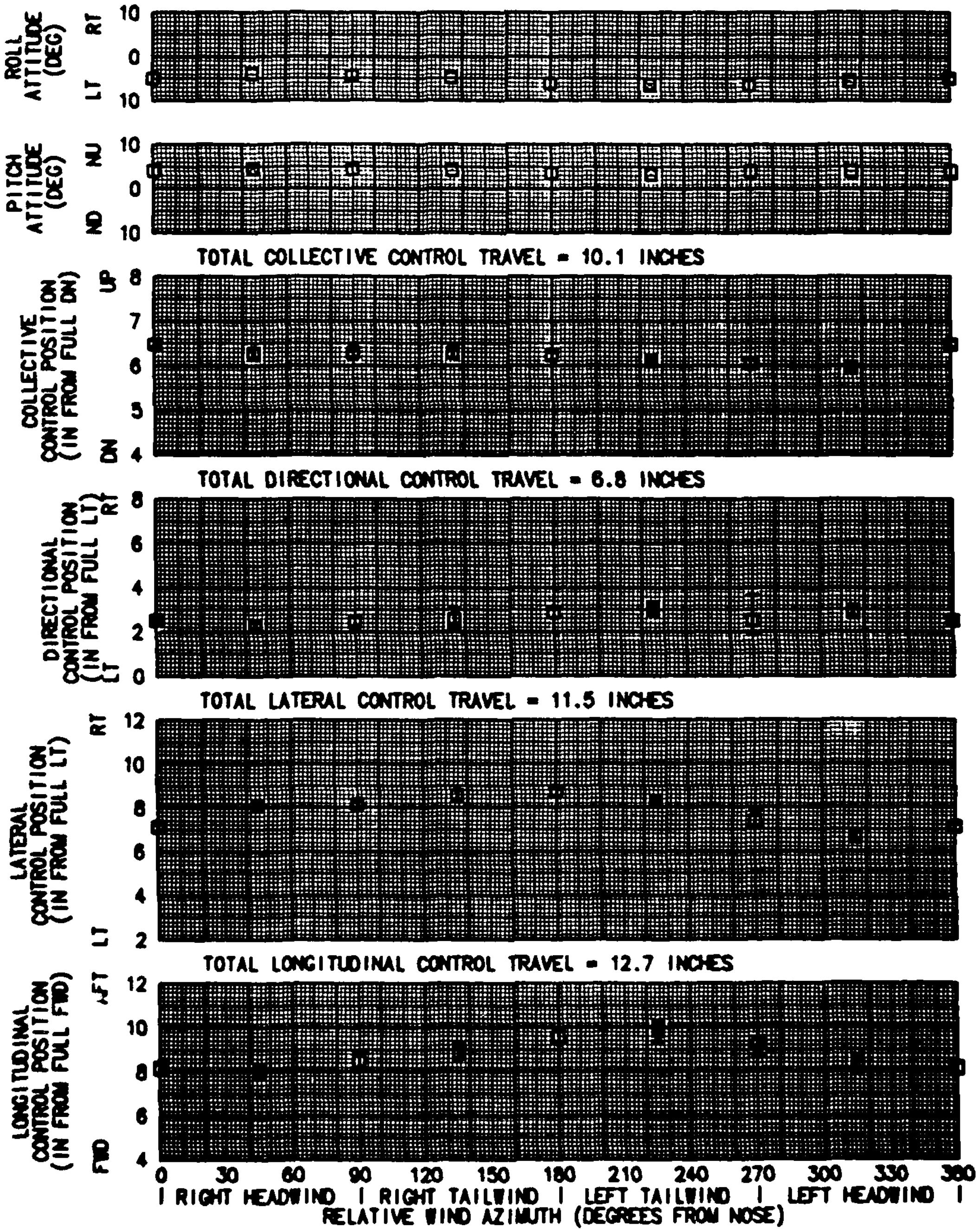


FIGURE E-148

CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	AVG CG LOCATION LAT (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3100	100.6(MID)	-4.1(LT)	3820	25.5	477	15	10

NOTES:
1. CONFIG. 2, LEFT ASYMM.
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

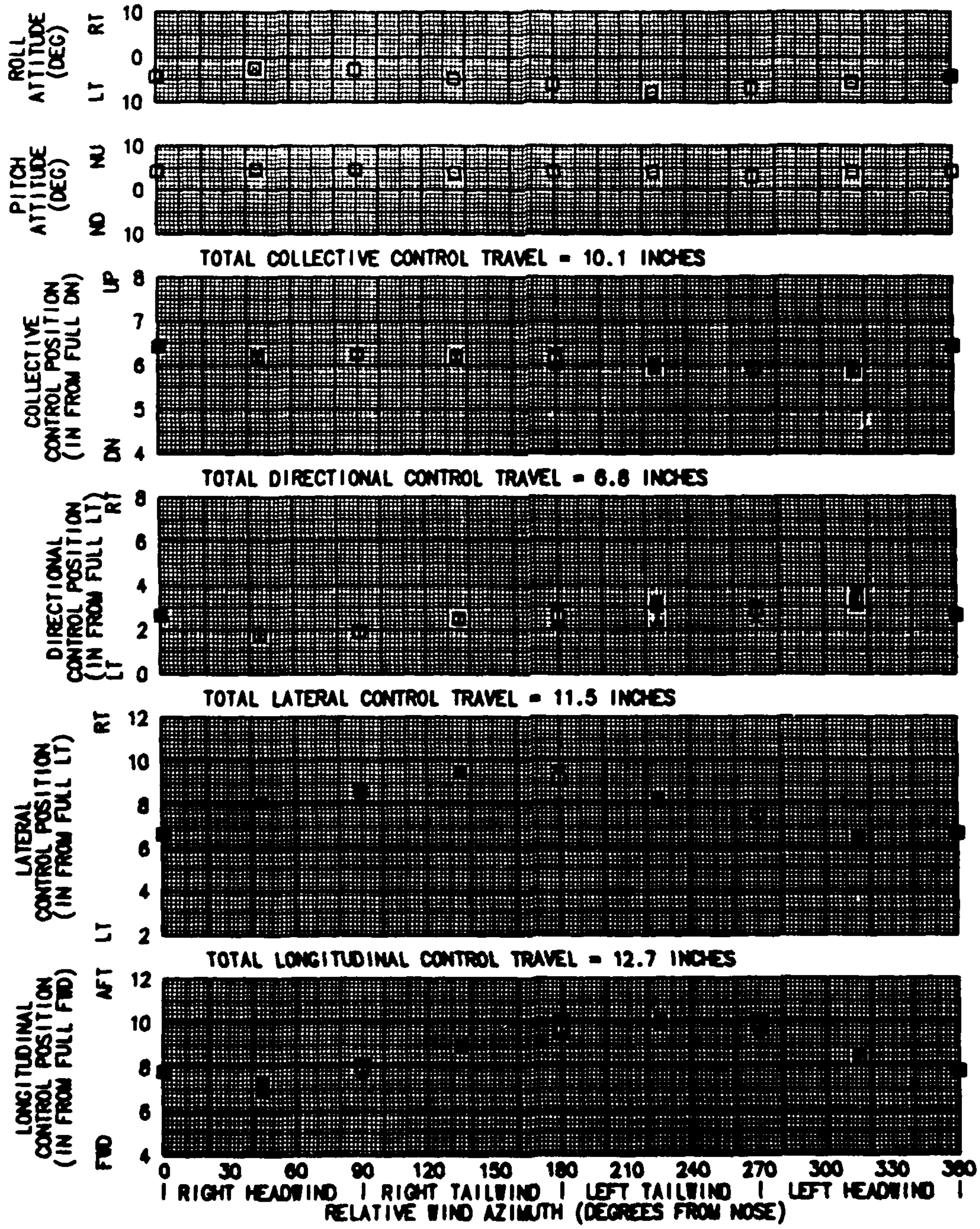


FIGURE E-149
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	AVG CG LOCATION LAT (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3100	100.6(MID)	-4.1(LT)	3820	25.5	477	20	10

NOTES: 1. CONFIG. 2, LEFT ASYMM.
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

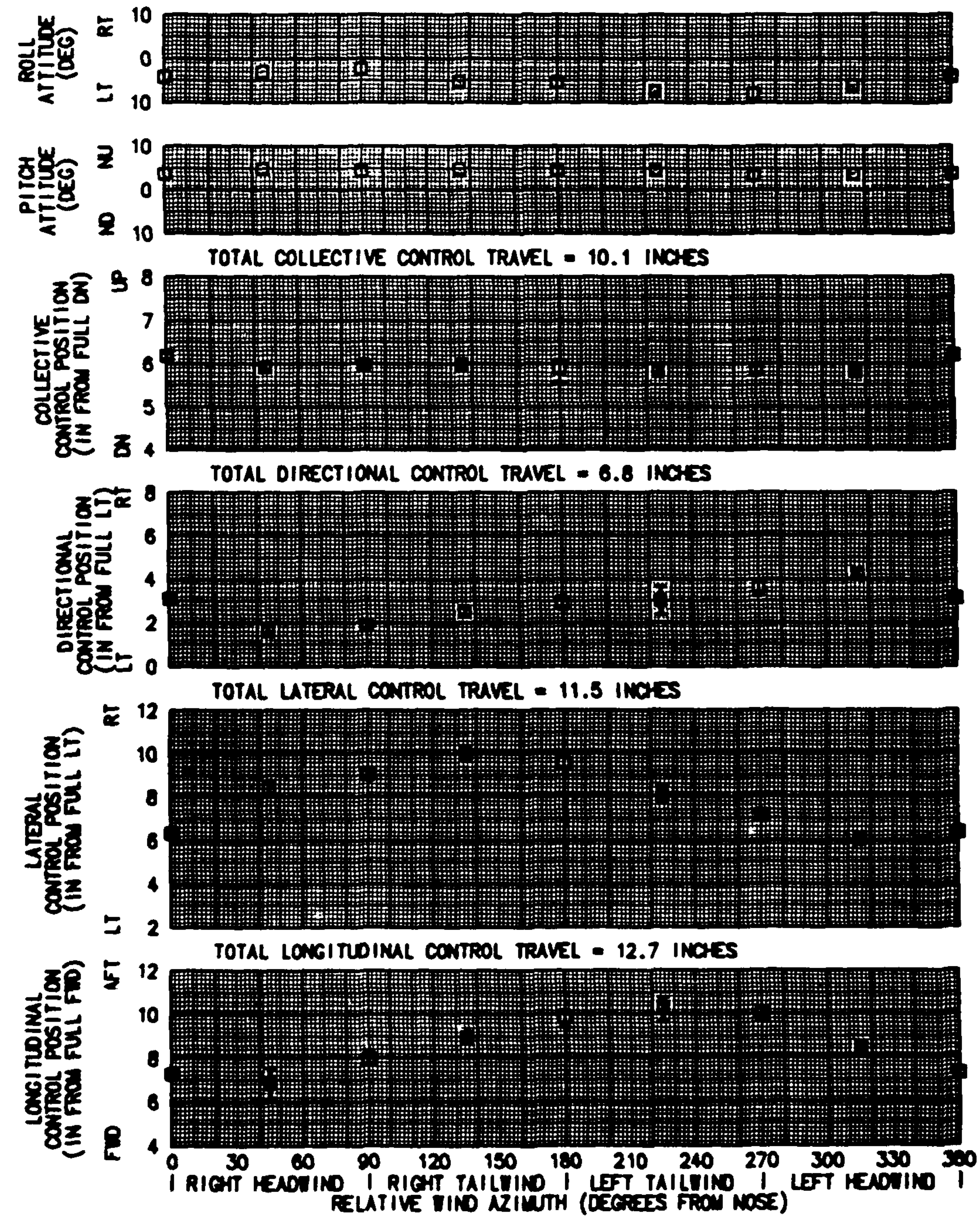


FIGURE E-150
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	LAT (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3100	100.6(MID)	-4.1(LT)	3820	26.0	477	25	10

NOTES: 1. CONFIG. 2, LEFT ASYMM.
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

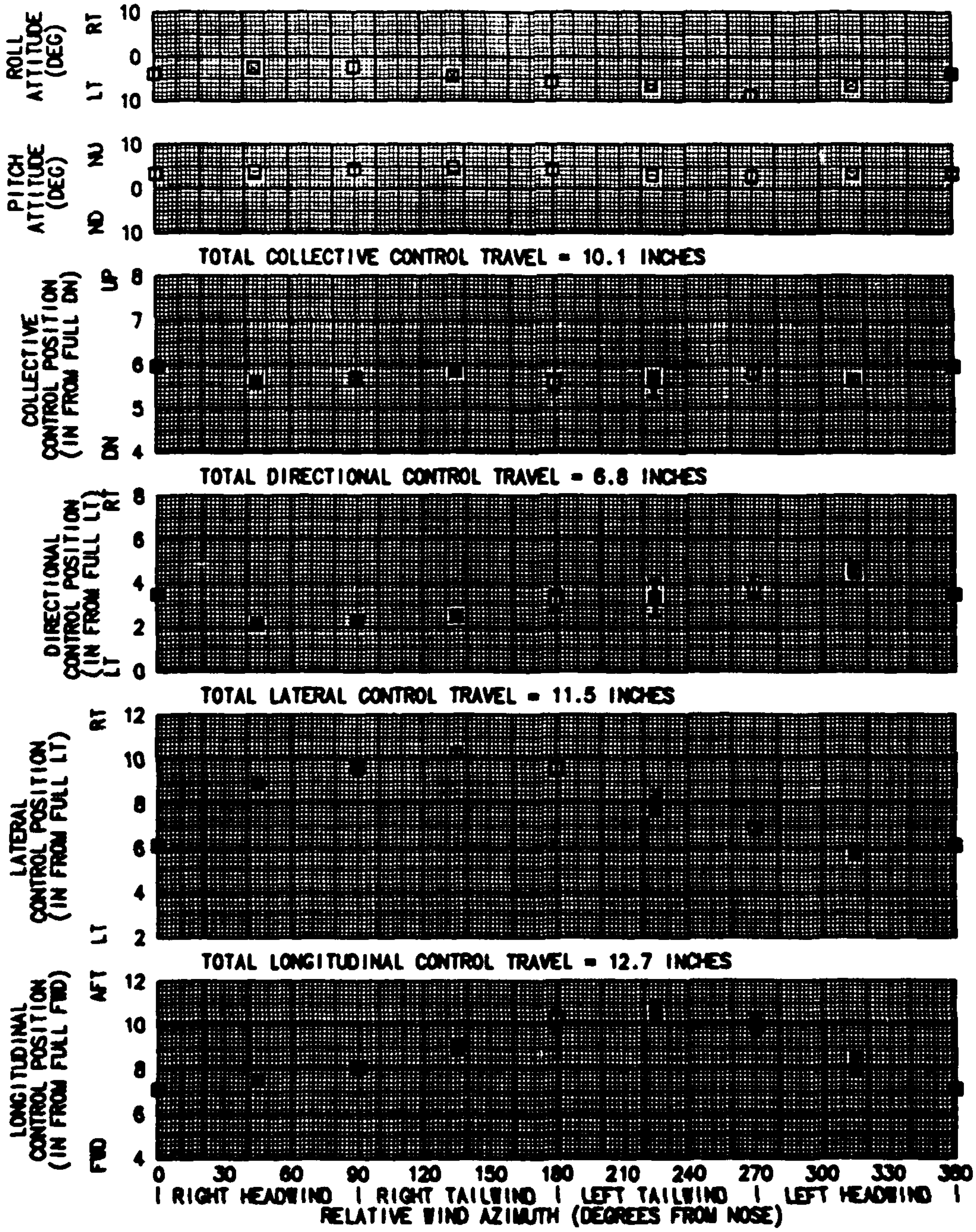


FIGURE E-151
CONTROL POSITIONS AT VARIOUS RELATIVE WIND AZIMUTHS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	AVG CG LOCATION LAT (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG TRUE AIRSPEED (KT)	SKID HEIGHT (FT)
3100	100.6(MID)	-4.1(LT)	3820	26.5	477	30	10

NOTES: 1. CONFIG. 2, LEFT ASYMM.
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

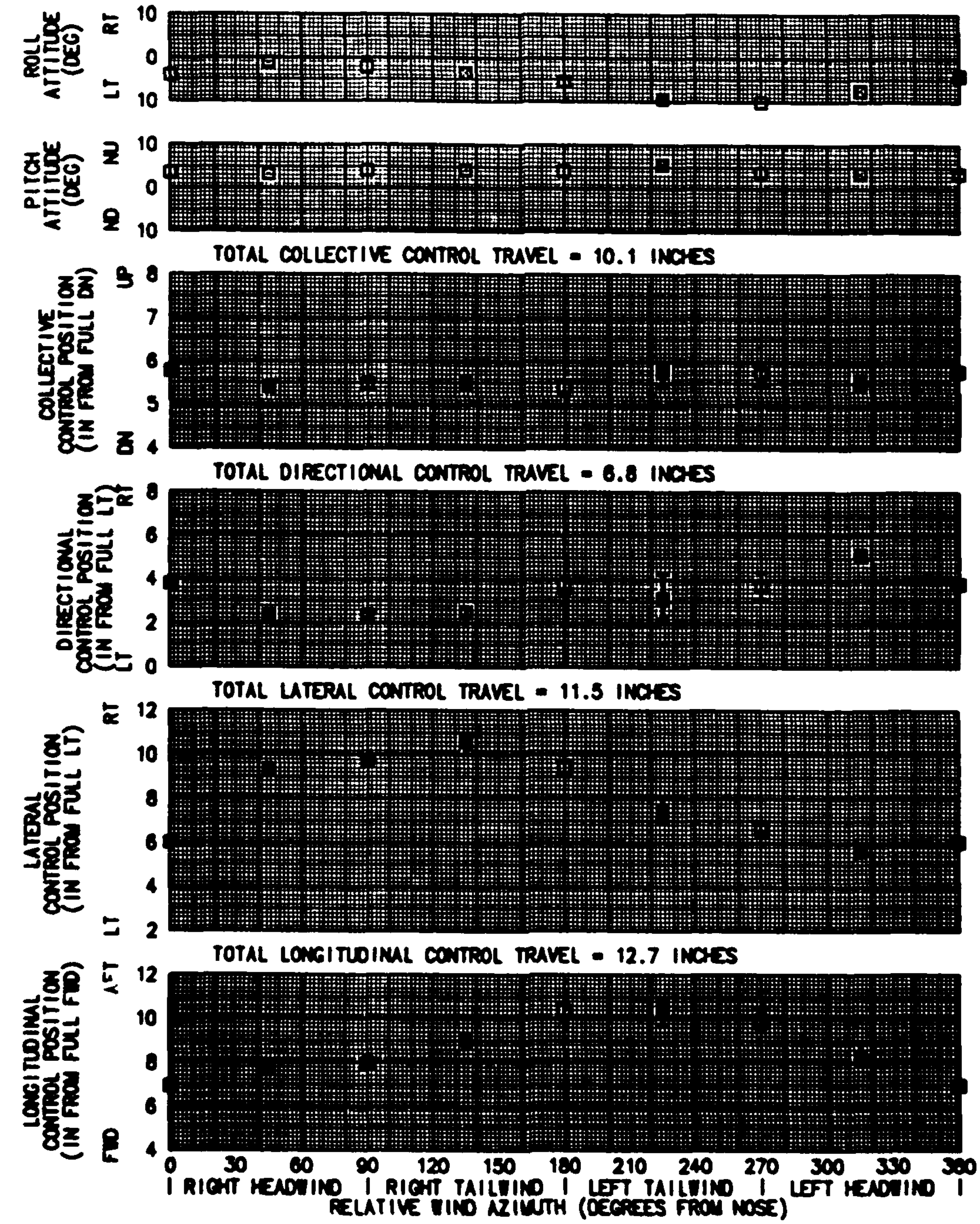


FIGURE E-152
LOW SPEED FORWARD AND REARWARD FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	LAT (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
3150	100.6(MID)	-4.1(LT)	3520	25.5	477	10

NOTES: 1. CONFIG. 2, LEFT ASYMM.
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

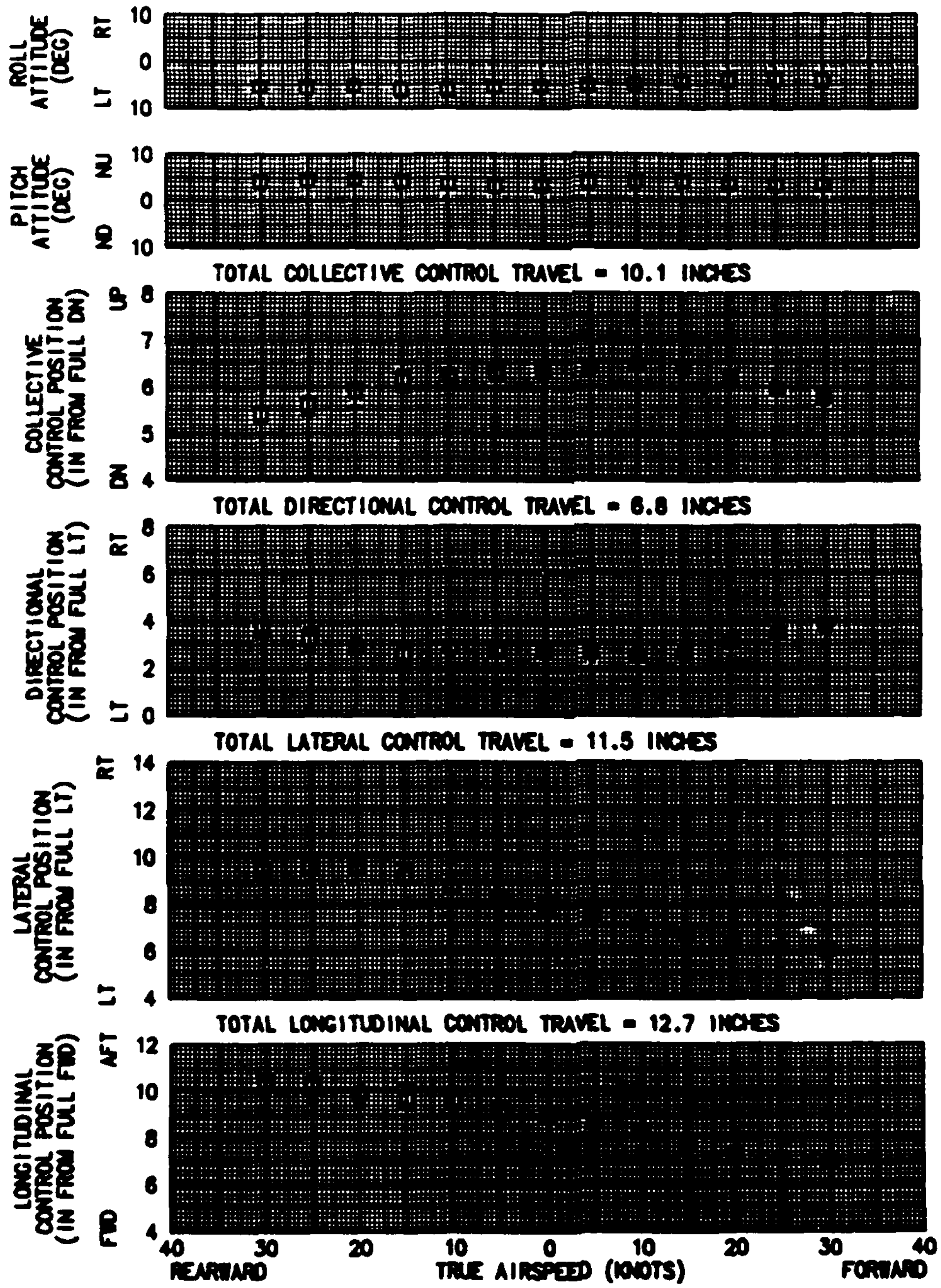


FIGURE E-153
LOW SPEED LEFT AND RIGHT SIDEWARD FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	LAT (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
3070	100.6(MID)	-4.1(LT)	3840	25.5	477	10

NOTES: 1. CONFIG. 2, LEFT ASYMM.
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

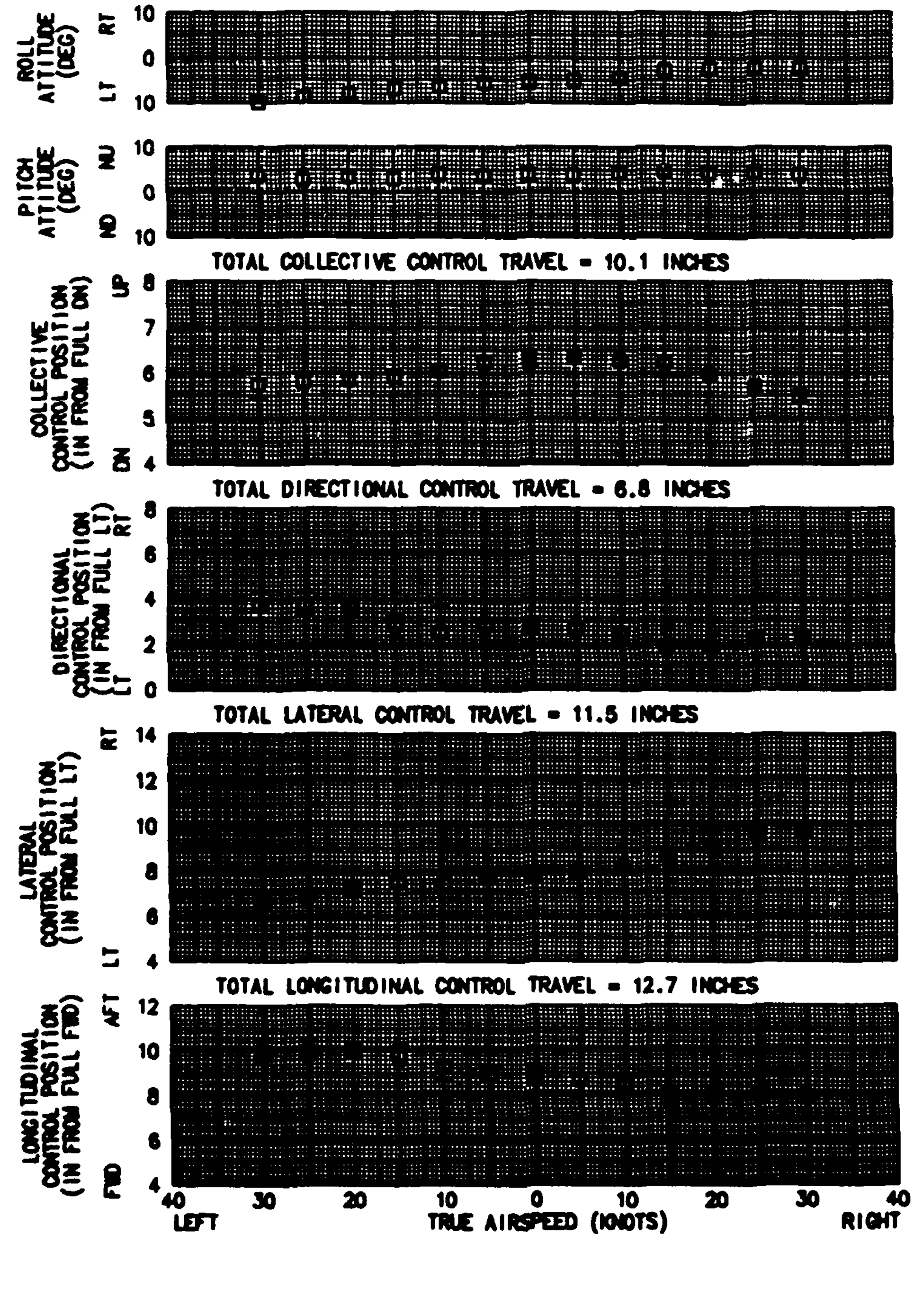


FIGURE E-154
LOW SPEED 45 AND 225 AZIMUTH FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	AVG CG LOCATION LAT (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
3110	100.6(MID)	-4.1(LT)	3790	25.5	477	10

NOTES: 1. CONFIG. 2, LEFT ASYMM.
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

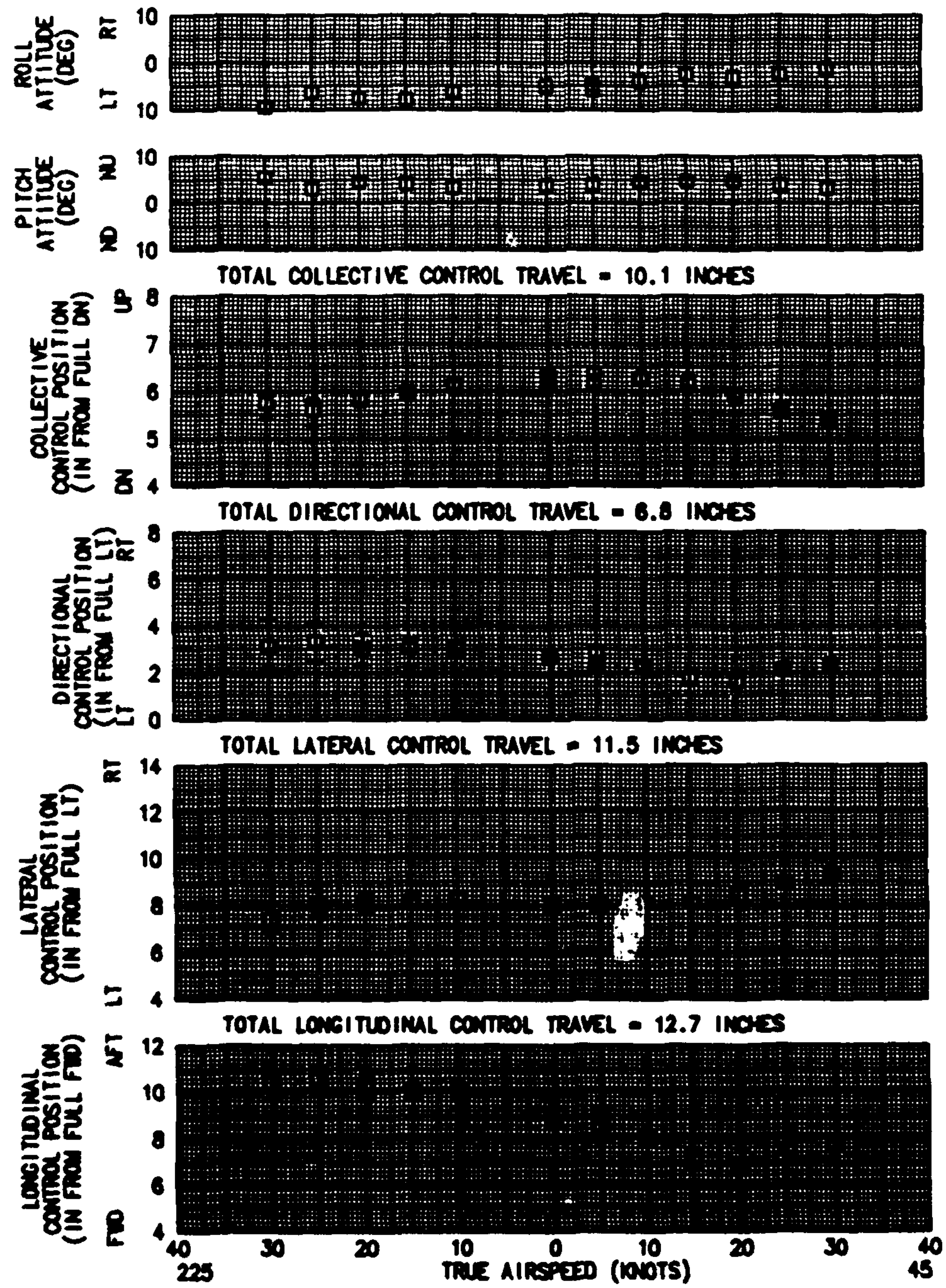


FIGURE E-155
LOW SPEED 315 AND 135 AZIMUTH FLIGHT
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION LONG (FS)	LAT (BL)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	SKID HEIGHT (FT)
3040	100.7(MID)	-4.1(LT)	3850	25.5	477	10

NOTES: 1. CONFIG. 2, LEFT ASYMM.
2. WINDS LESS THAN 3 KNOTS
3. VERTICAL LINES DENOTE CONTROL AND AIRCRAFT EXCURSIONS
4. GROUND PACE VEHICLE USED TO DETERMINE AIRCRAFT TRUE AIRSPEED

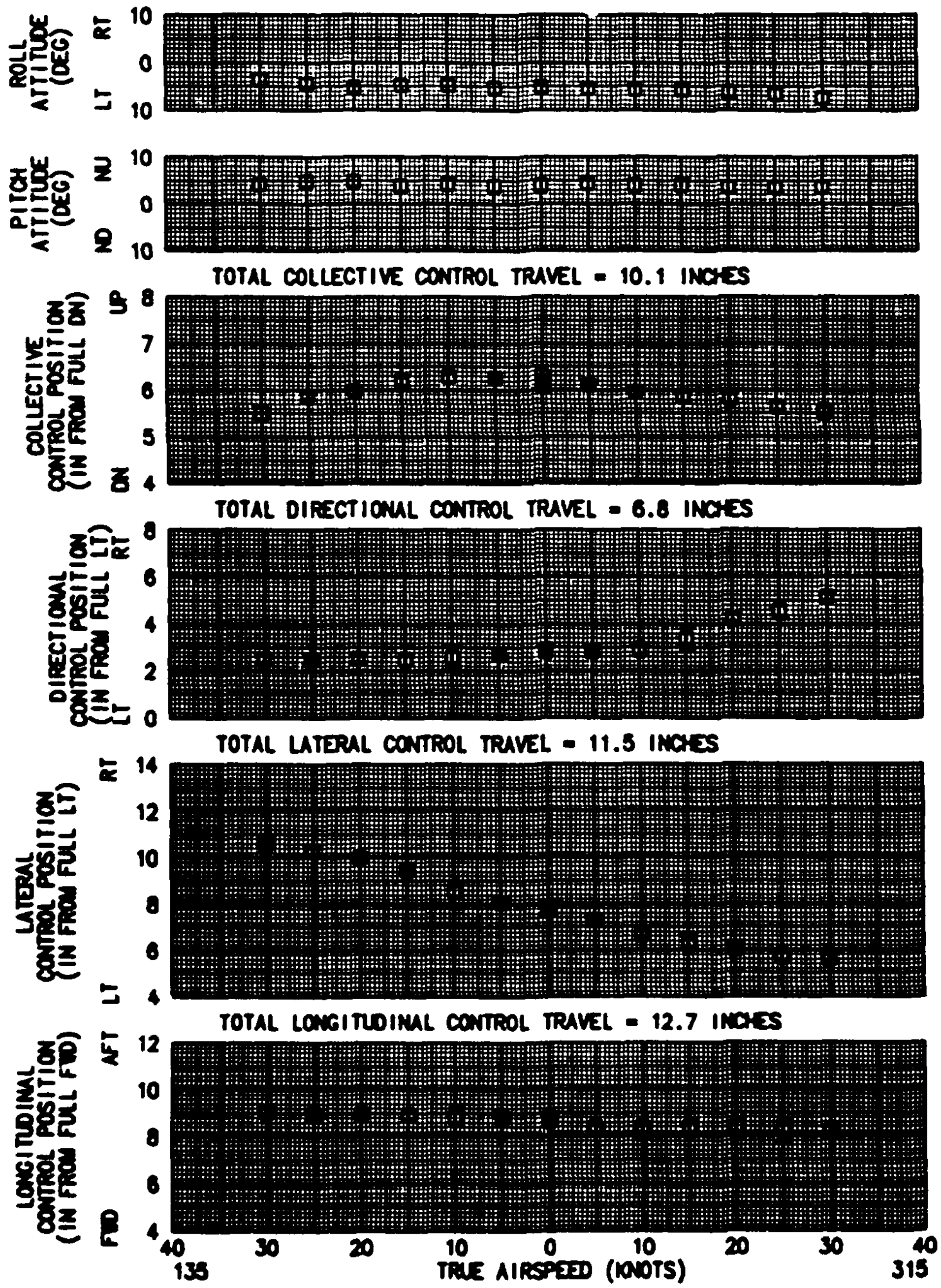
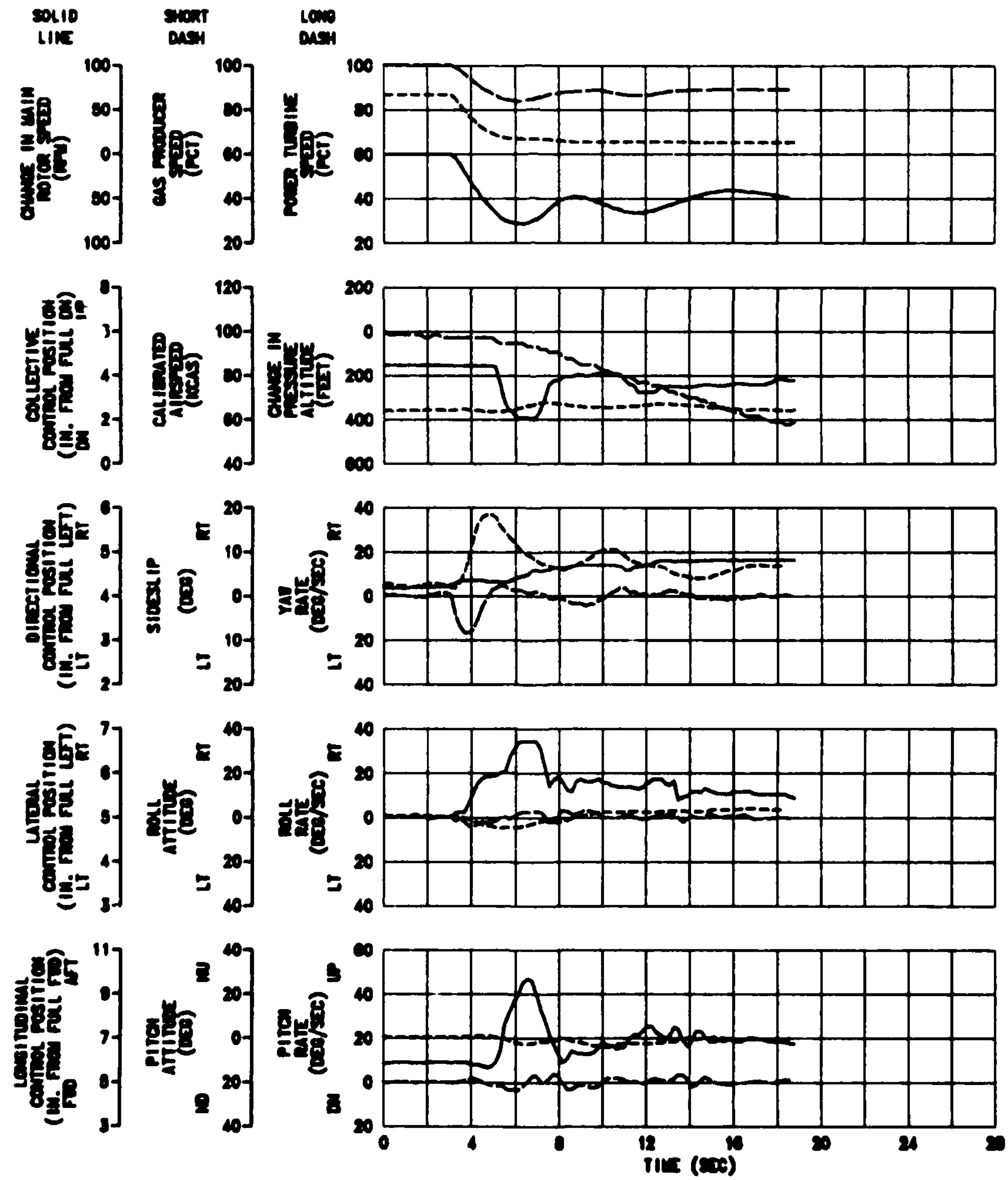


FIGURE E-186

SIMULATED ENGINE FAILURE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KT)	CONFIGURATON	TRIM FLIGHT CONDITION
2970	100.8(MID)	7670	17.5	477	64	EPS EMPTY	LEVEL



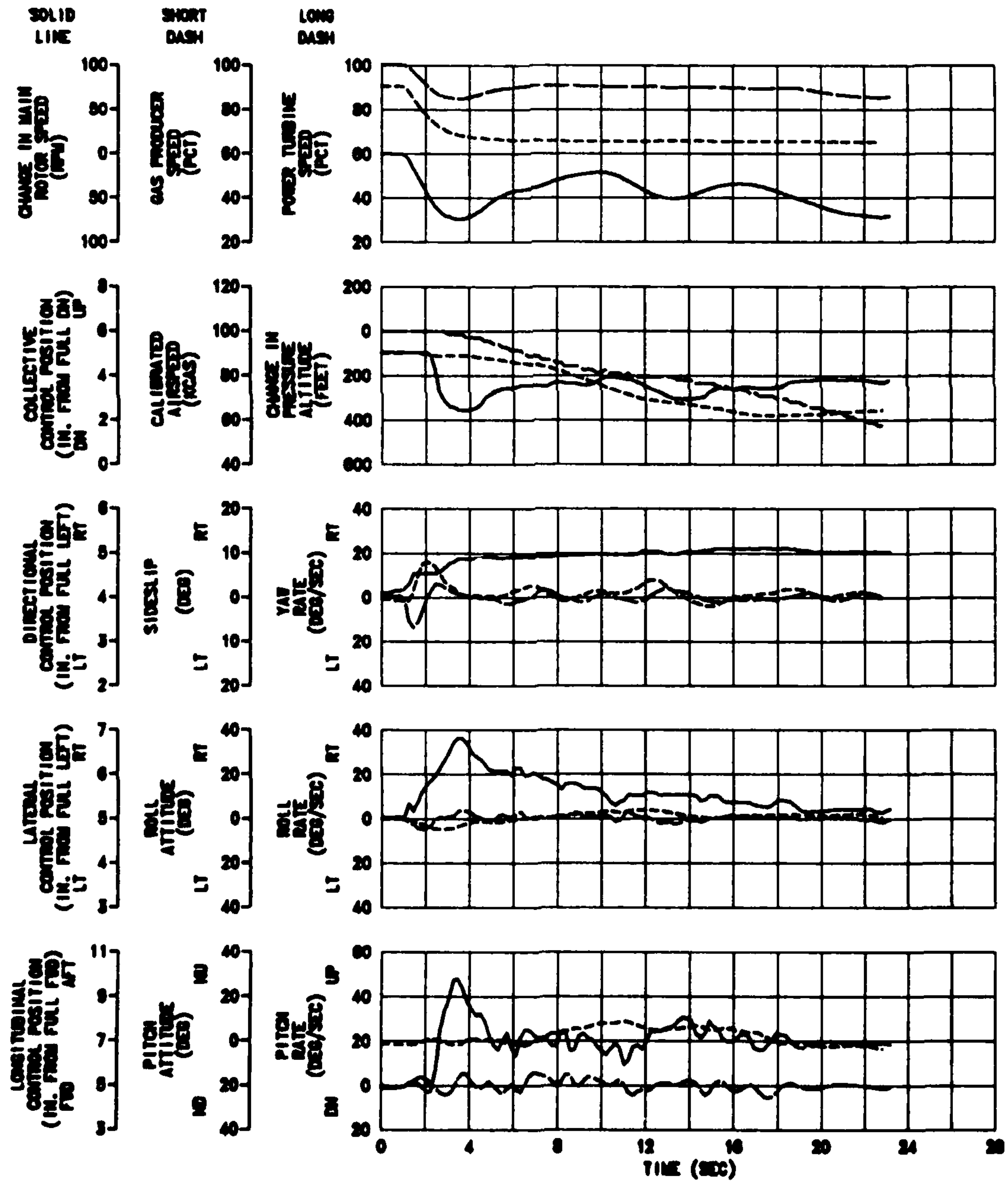
319 087 07X 9 13 47 0 9 14 8 28

FIGURE E-157

SIMULATED ENGINE FAILURE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KT)	CONFIGURATON	TRIM FLIGHT CONDITION
2950	100.8(MID)	7600	17.5	477	90	EPS EMPTY	LEVEL



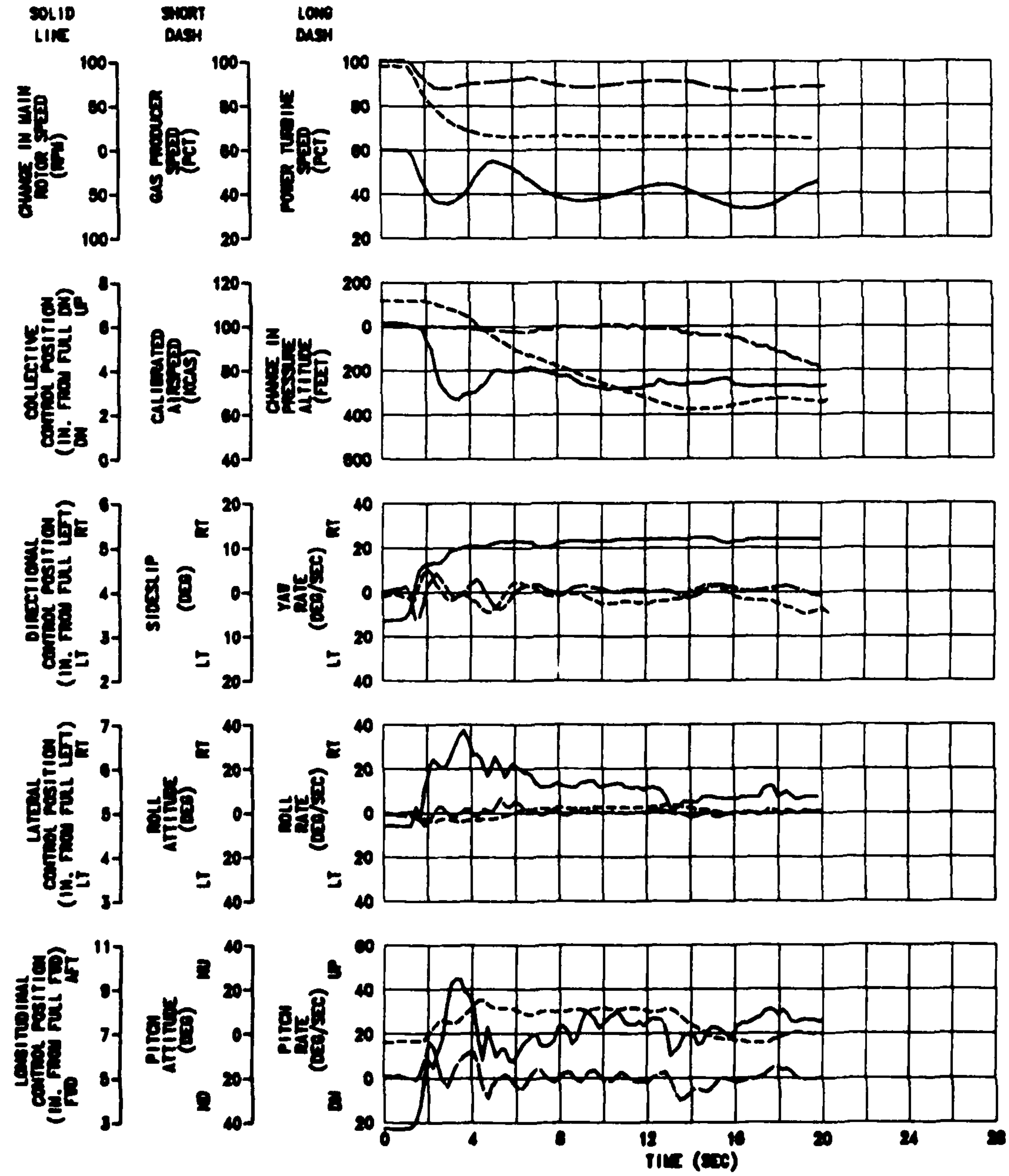
319 087 11X 9 20 89 0 9 21 22 214

FIGURE E-158

SIMULATED ENGINE FAILURE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KT)	CONFIGURATON	TRIM FLIGHT CONDITION
2930	100.8(MID)	7830	17.5	477	111	EPS EMPTY	LEVEL



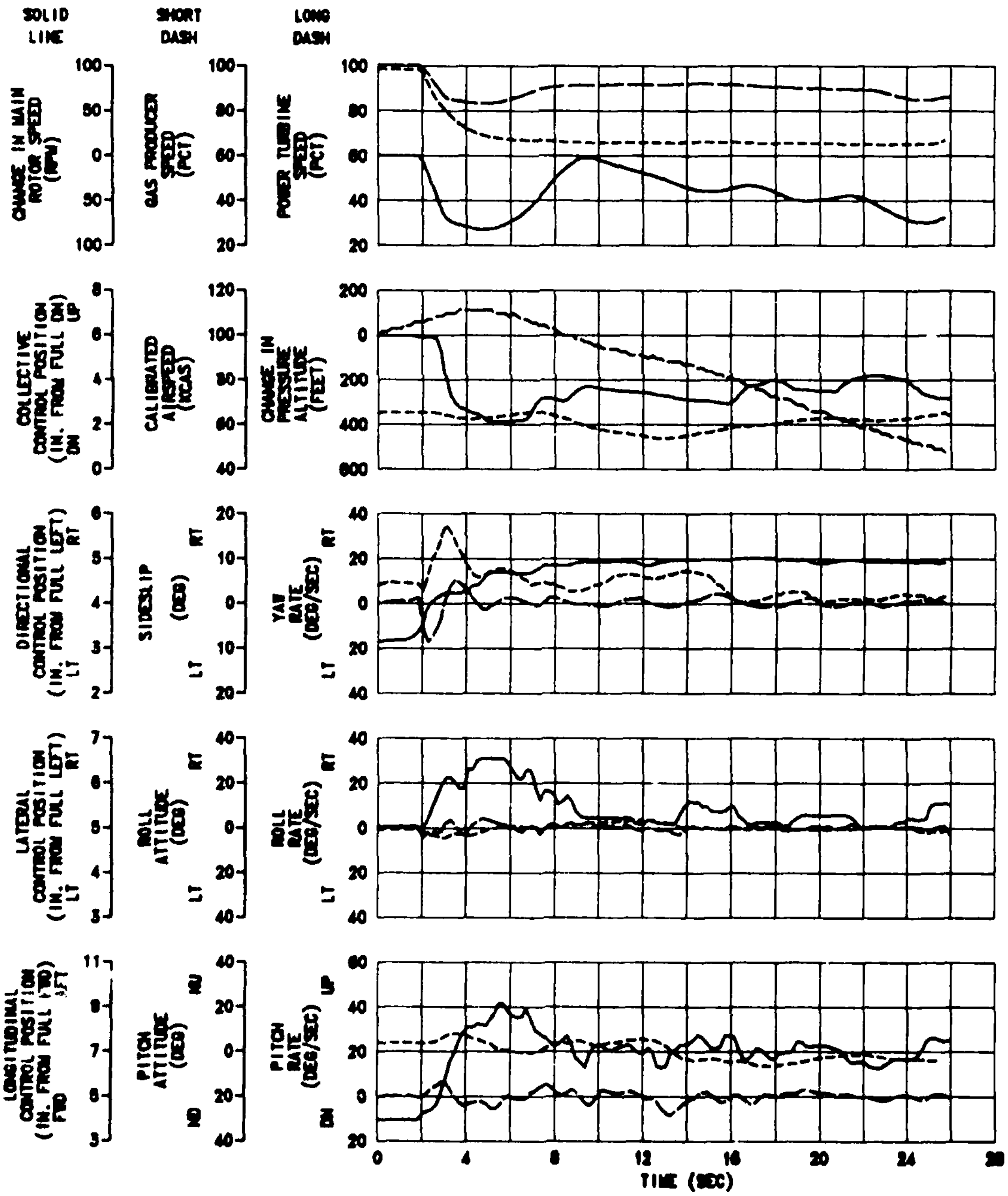
319 087 15X 9 28 38 0 9 28 88 327

FIGURE E-159

SIMULATED ENGINE FAILURE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KT)	CONFIGURATON	TRIM FLIGHT CONDITION
2910	100.8(MID)	8940	16.0	477	65	EPS EMPTY	T.O. PWR CLIMB



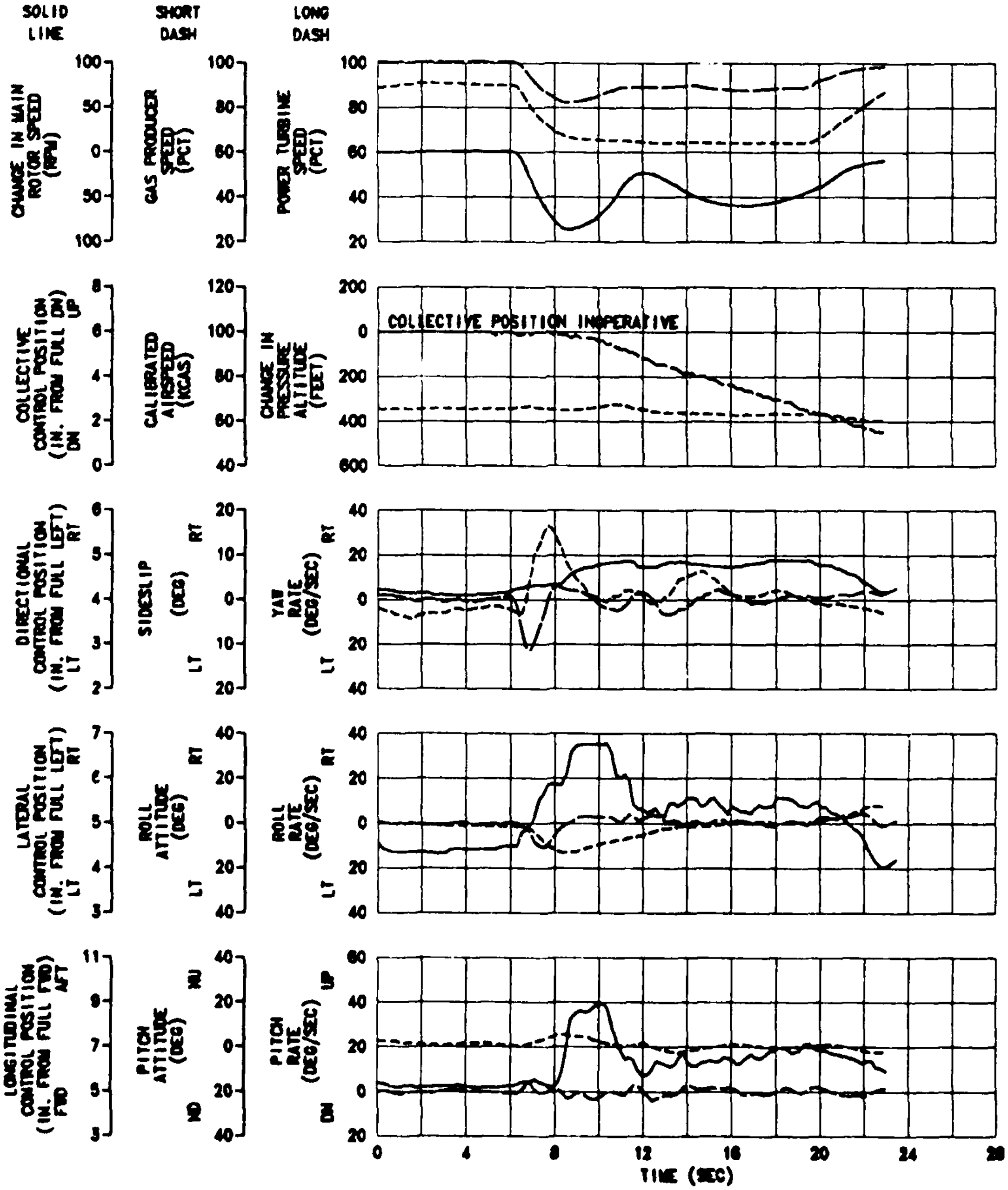
319 087 16X 9 33 11 0 9 33 36 186

FIGURE E-160

SIMULATED ENGINE FAILURE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KT)	CONFIGURATON	TRIM FLIGHT CONDITION
3780	100.4	6300	22.5	477	66	EPS EMPTY	LEVEL



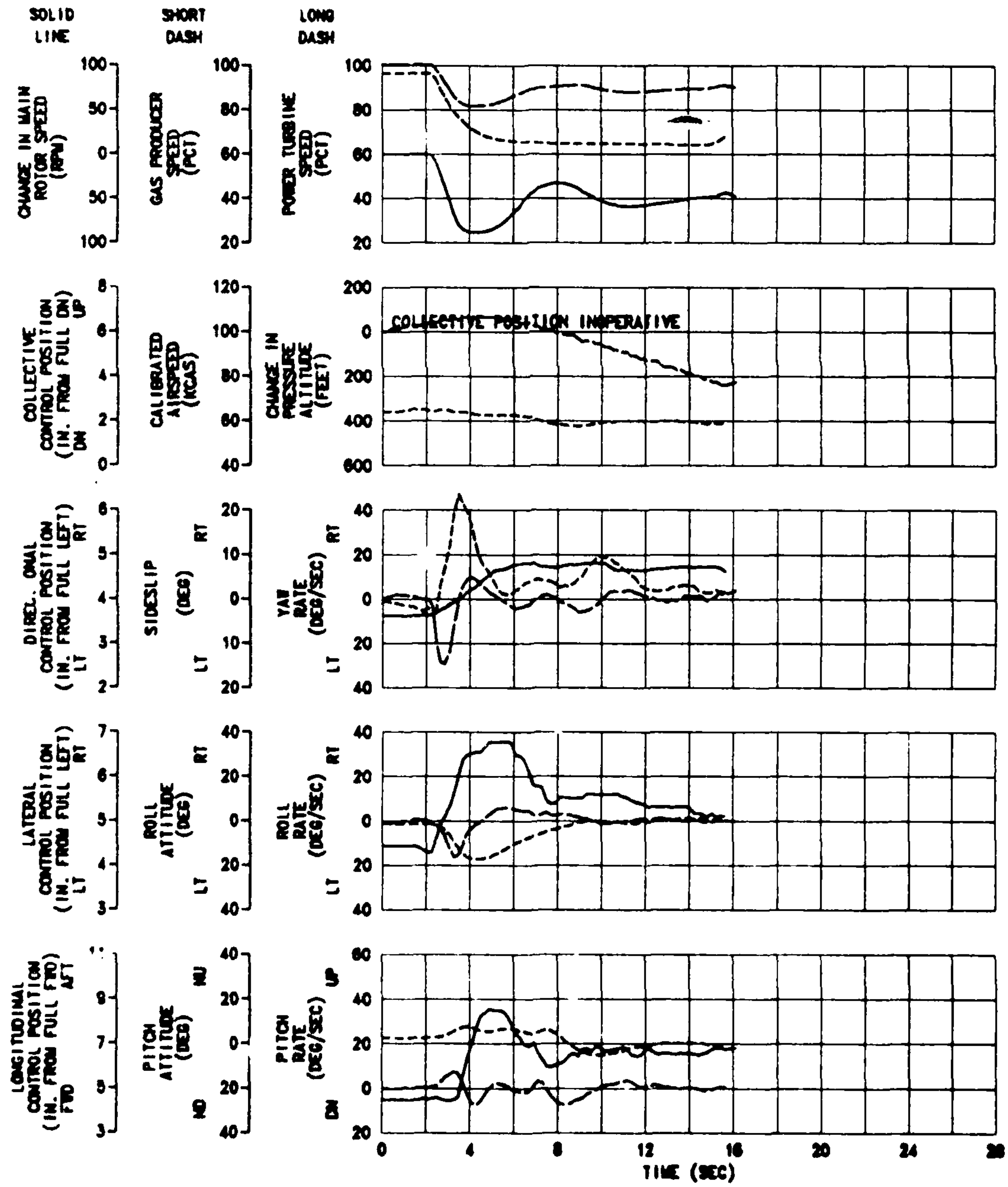
319 117 06X 6 44 37 0 6 45 0 656

FIGURE E-161

SIMULATED ENGINE FAILURE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KT)	CONFIGURATON	TRIM FLIGHT CONDITION
3760	100.4	6400	22.0	477	65	EPS EMPTY	T.O. PWR CLIMB



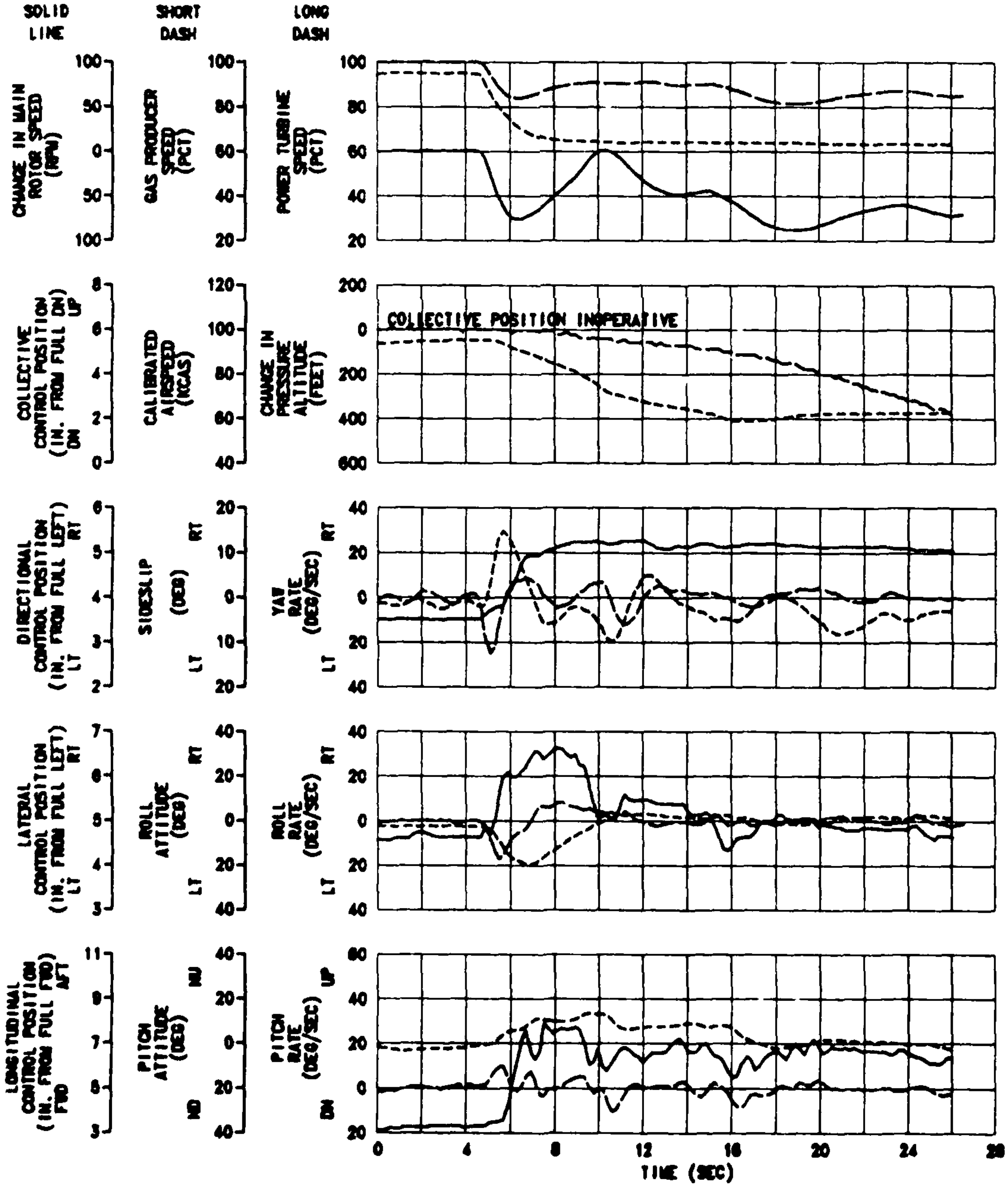
319 117 11X 6 50 25 0 6 50 41 180

FIGURE E-162

SIMULATED ENGINE FAILURE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KT)	CONFIGURATON	TRIM FLIGHT CONDITION
3740	101.4	6300	24.5	477	94	19-SHOT ROCKET BOTH SIDES UNIV. MOUNT	LEVEL



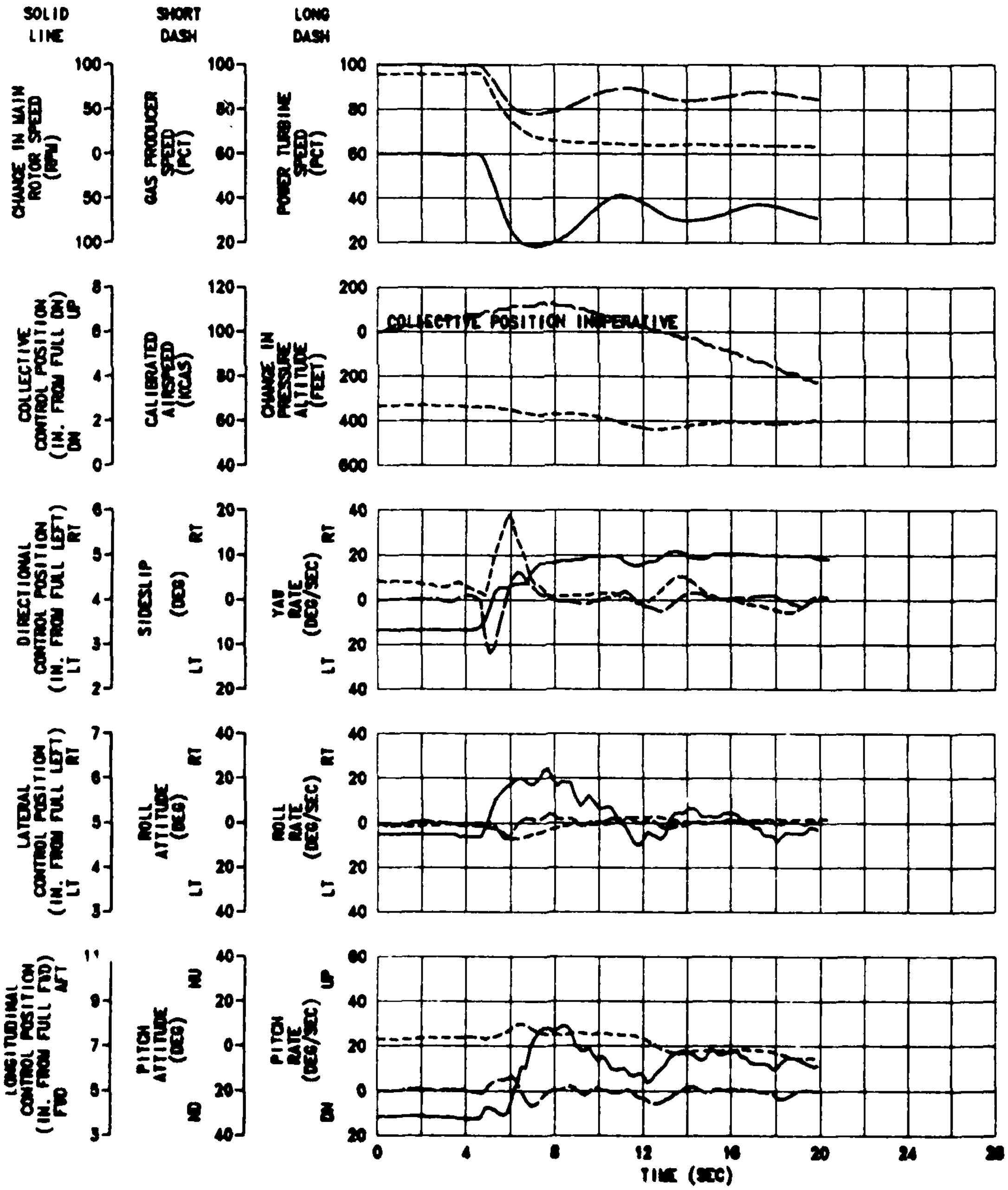
319 112 10X 6 29 54 0 6 30 20 983

FIGURE E-163

SIMULATED ENGINE FAILURE

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KT)	CONFIGURATON	TRIM FLIGHT CONDITION
3720	101.4	6400	24.0	477	66	19-SHOT ROCKET BOTH SIDES UNIV. MOUNT	T.O. PWR CLIMB



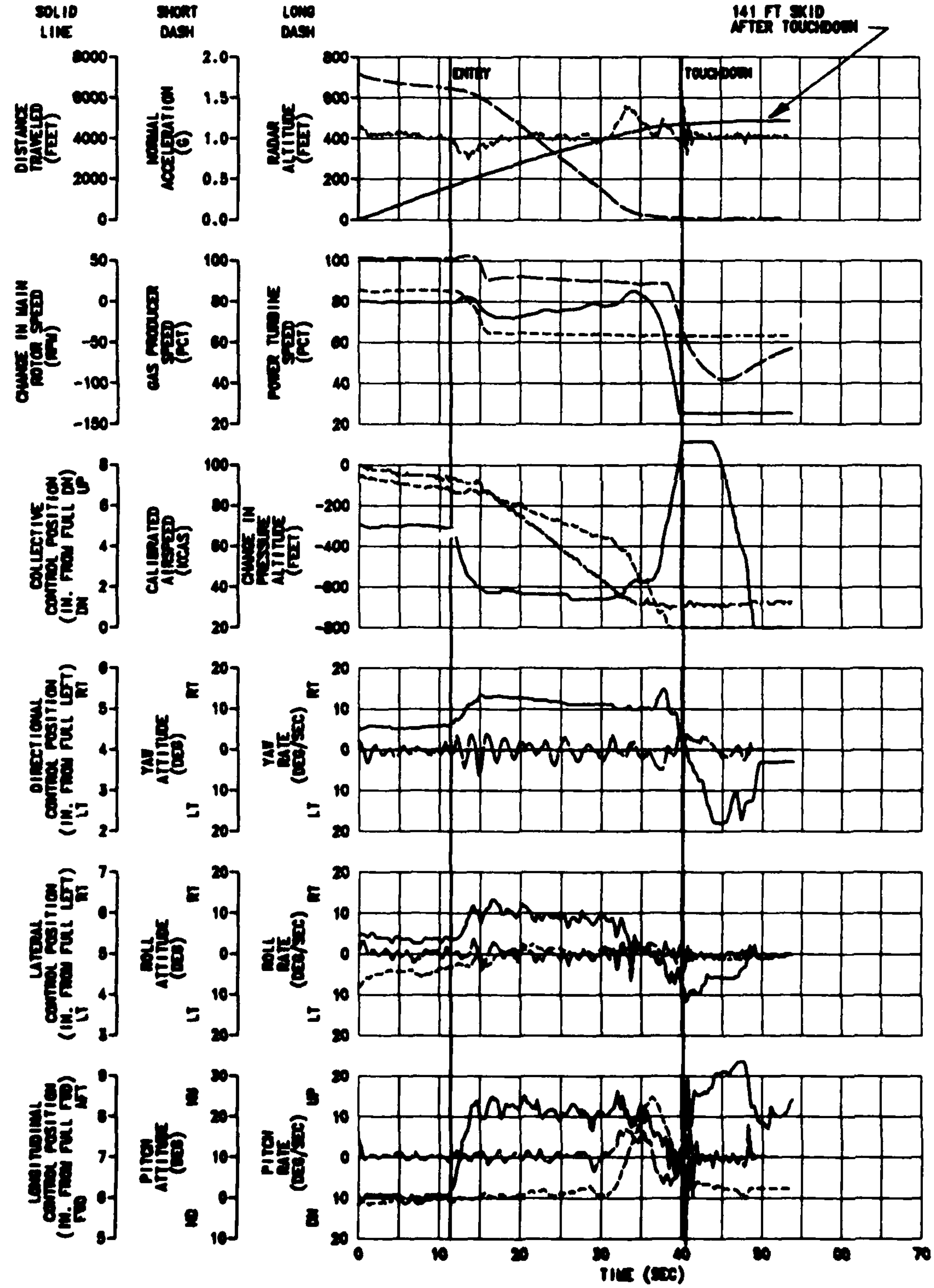
319 112 14X 6 34 40 0 6 36 9 506

FIGURE E-164

TOUCHDOWN AUTOROTATION

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KT)	CONFIGURATON
2880	101.6(MID)	3720	19.5	477	95	EPS EMPTY



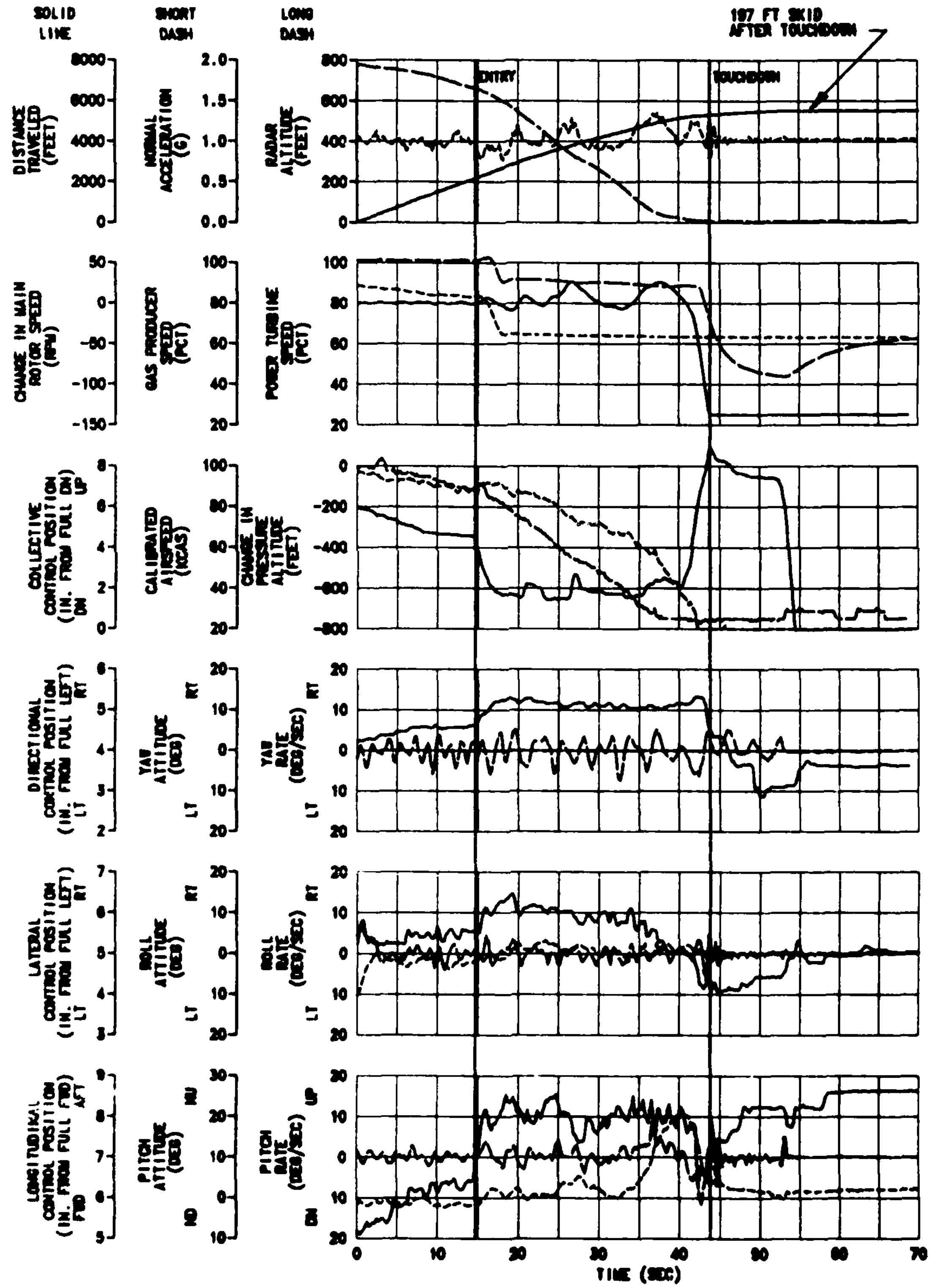
319 131 08X 9 8 46 0 9 1 40 1

FIGURE E-186

TOUCHDOWN AUTOROTATION

AH-6J USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG CG LOCATION (FS)	TRIM DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	TRIM ROTOR SPEED (RPM)	TRIM CALIBRATED AIRSPEED (KT)	CONFIGURATON
3190	101.4(MID)	3720	19.5	477	97	EPS EMPTY



319 131 11X 10 18 13 0 10 20 29 34

FIGURE E-166
VIBRATION CHARACTERISTICS
AH-6G USA S/N 84-24319
PLANK RIGHT FORWARD VERTICAL ACCELEROMETER

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM FLIGHT CONDITION	CONFIGURATION
□	2990	101.1(MID)	4370	29.5	477	LVL FLT	PLANK EMPTY
○	2960	101.1(MID)	4430	28.0	477	RT TURN	
△	2960	101.1(MID)	4390	28.5	477	LT TURN	
◇	3510	100.6(MID)	5070	35.0	477	LVL FLT	PLANK, TWO 50 CAL
⊠	3170	100.9(MID)	5220	35.0	477	RT TURN	
⌑	3350	101.0(MID)	5170	35.0	477	LT TURN	
⊕	3770	100.4(MID)	4660	31.5	477	LVL FLT	PLANK, 50 CAL AND 7-SHOT ROCKET LAUNCHER
⊞	3760	100.4(MID)	4620	32.0	477	RT TURN	
☆	3760	100.4(MID)	4640	32.0	477	LT TURN	
♧	3740	100.2(MID)	5150	23.0	477	LVL FLT	PLANK, TWO 19-SHOT ROCKET LAUNCHERS
♤	3790	100.2(MID)	6110	22.5	477	RT TURN	
♙	3790	100.2(MID)	5900	23.0	477	LT TURN	

NOTE: ACCELEROMETERS WERE MOVED TO INBOARD PLANK STATIONS FOR THE 50 CAL ONLY CONFIGUATION.

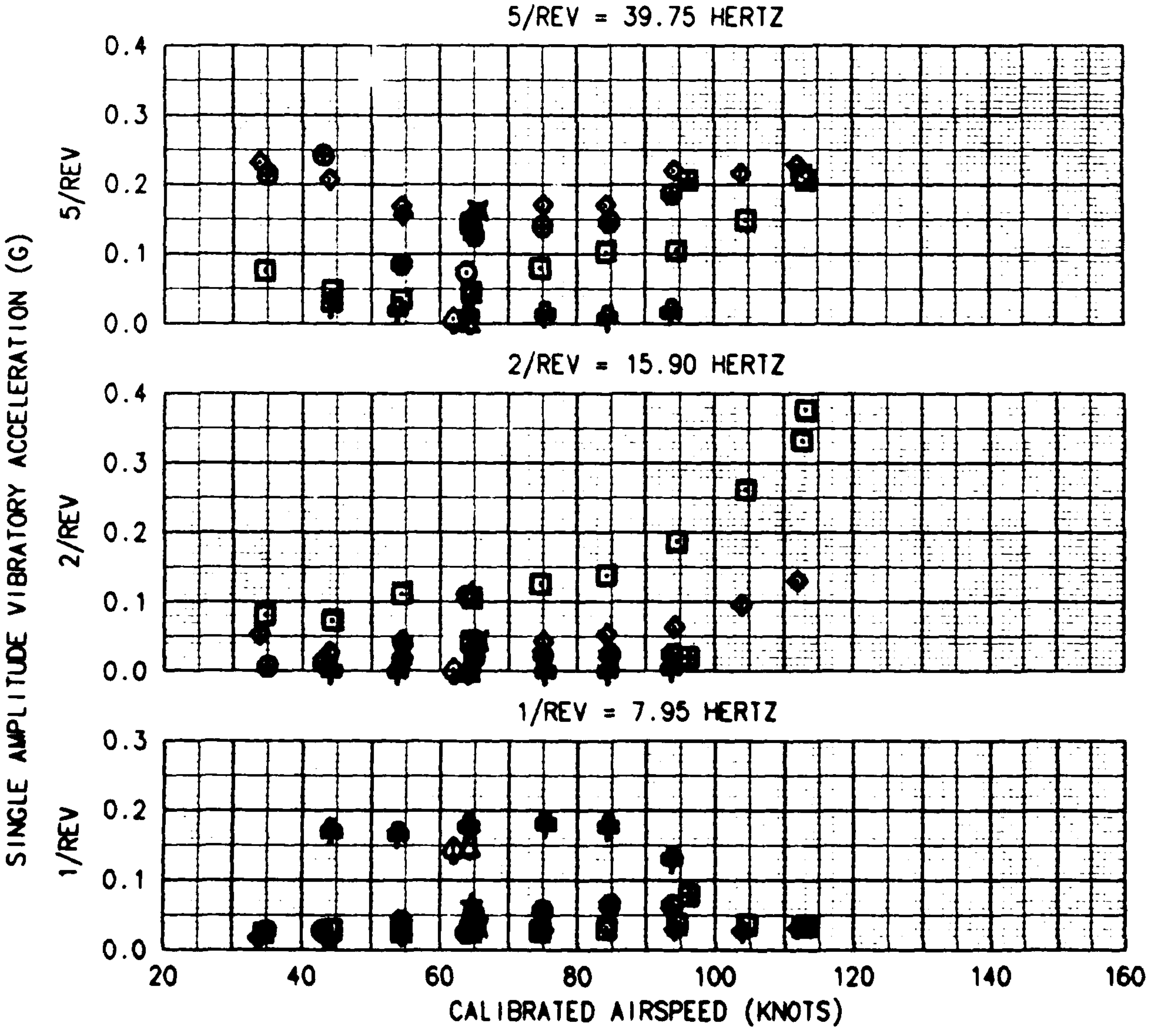


FIGURE E-167
VIBRATION CHARACTERISTICS
AH-6G USA S/N 84-24319
PLANK RIGHT AFT VERTICAL ACCELEROMETER

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM FLIGHT CONDITION	CONFIGURATION
□	2990	101.1(MID)	4370	29.5	477	LVL FLT	PLANK EMPTY
○	2960	101.1(MID)	4430	28.0	477	RT TURN	
△	2960	101.1(MID)	4390	28.5	477	LT TURN	
◇	3510	100.6(MID)	5070	35.0	477	LVL FLT	PLANK, TWO 50 CAL
⊠	3170	100.9(MID)	5220	35.0	477	RT TURN	
⌑	3350	101.0(MID)	5170	35.0	477	LT TURN	
⊕	3770	100.4(MID)	4660	31.5	477	LVL FLT	PLANK, 50 CAL AND 7-SHOT ROCKET LAUNCHER
⊞	3760	100.4(MID)	4620	32.0	477	RT TURN	
☆	3760	100.4(MID)	4640	32.0	477	LT TURN	
♧	3740	100.2(MID)	5150	23.0	477	LVL FLT	PLANK, TWO 19-SHOT ROCKET LAUNCHERS
♤	3790	100.2(MID)	6110	22.5	477	RT TURN	
♫	3790	100.2(MID)	5900	23.0	477	LT TURN	

NOTE: ACCELEROMETERS WERE MOVED TO INBOARD PLANK STATIONS FOR THE 50 CAL ONLY CONFIGUATION.

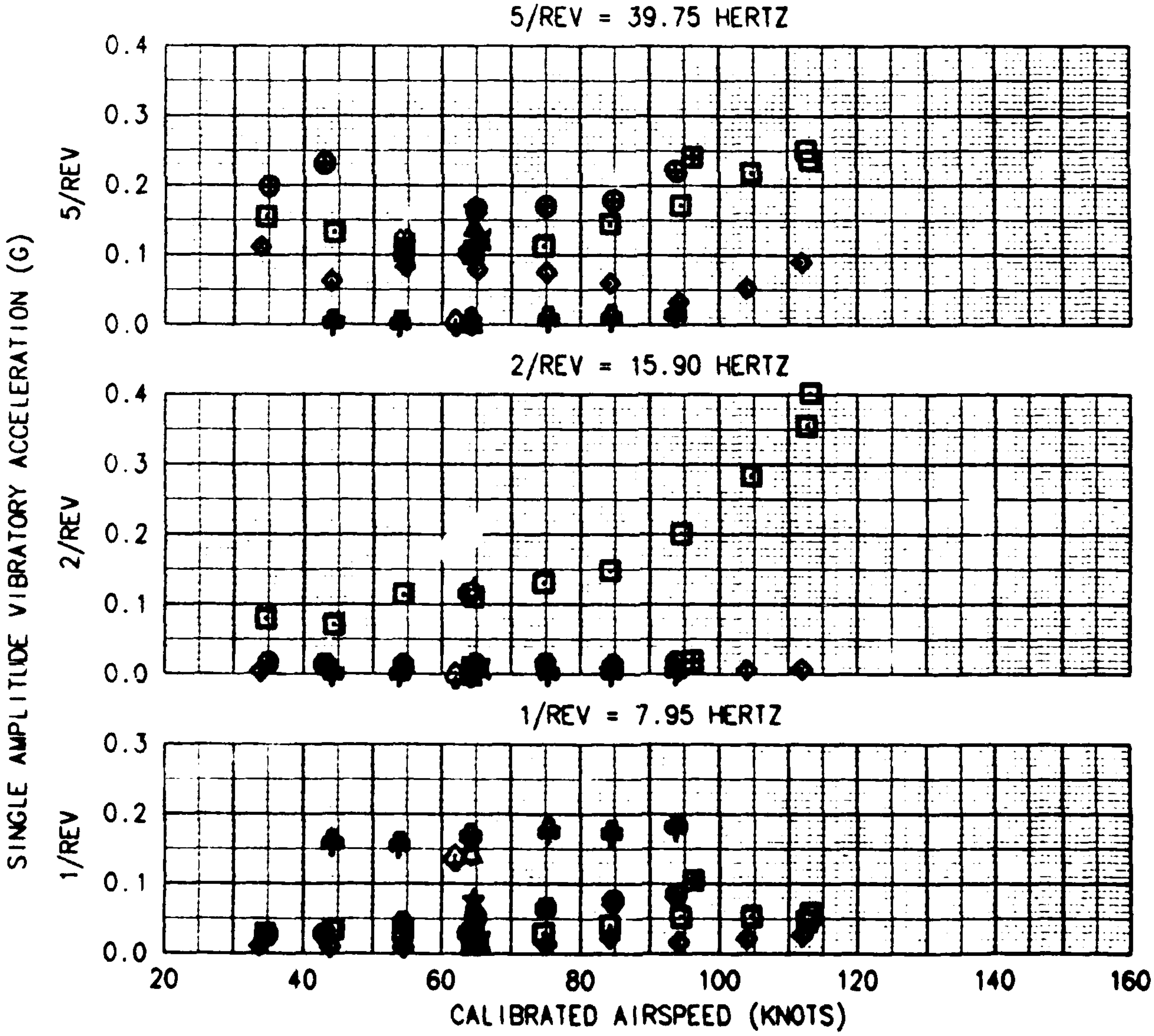


FIGURE E-168
VIBRATION CHARACTERISTICS
AH-6G USA S/N 84-24319
PLANK LEFT FORWARD VERTICAL ACCELEROMETER

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM FLIGHT CONDITION	CONFIGURATION
□	2990	101.1(MID)	4370	29.5	477	LVL FLT	PLANK EMPTY
○	2960	101.1(MID)	4430	28.0	477	RT TURN	
△	2960	101.1(MID)	4390	28.5	477	LT TURN	
◇	3510	100.6(MID)	5070	35.0	477	LVL FLT	PLANK, TWO 50 CAL
⊠	3170	100.9(MID)	5220	35.0	477	RT TURN	
⌑	3350	101.0(MID)	5170	35.0	477	LT TURN	
⊕	3770	100.4(MID)	4660	31.5	477	LVL FLT	PLANK, 50 CAL AND 7-SHOT ROCKET LAUNCHER
⊞	3760	100.4(MID)	4620	32.0	477	RT TURN	
☆	3760	100.4(MID)	4640	32.0	477	LT TURN	
♧	3740	100.2(MID)	5150	23.0	477	LVL FLT	PLANK, TWO 19-SHOT ROCKET LAUNCHERS
♤	3790	100.2(MID)	6110	22.5	477	RT TURN	
♙	3790	100.2(MID)	5900	23.0	477	LT TURN	

NOTE: ACCELEROMETERS WERE MOVED TO INBOARD PLANK STATIONS FOR THE 50 CAL ONLY CONFIGUATION.

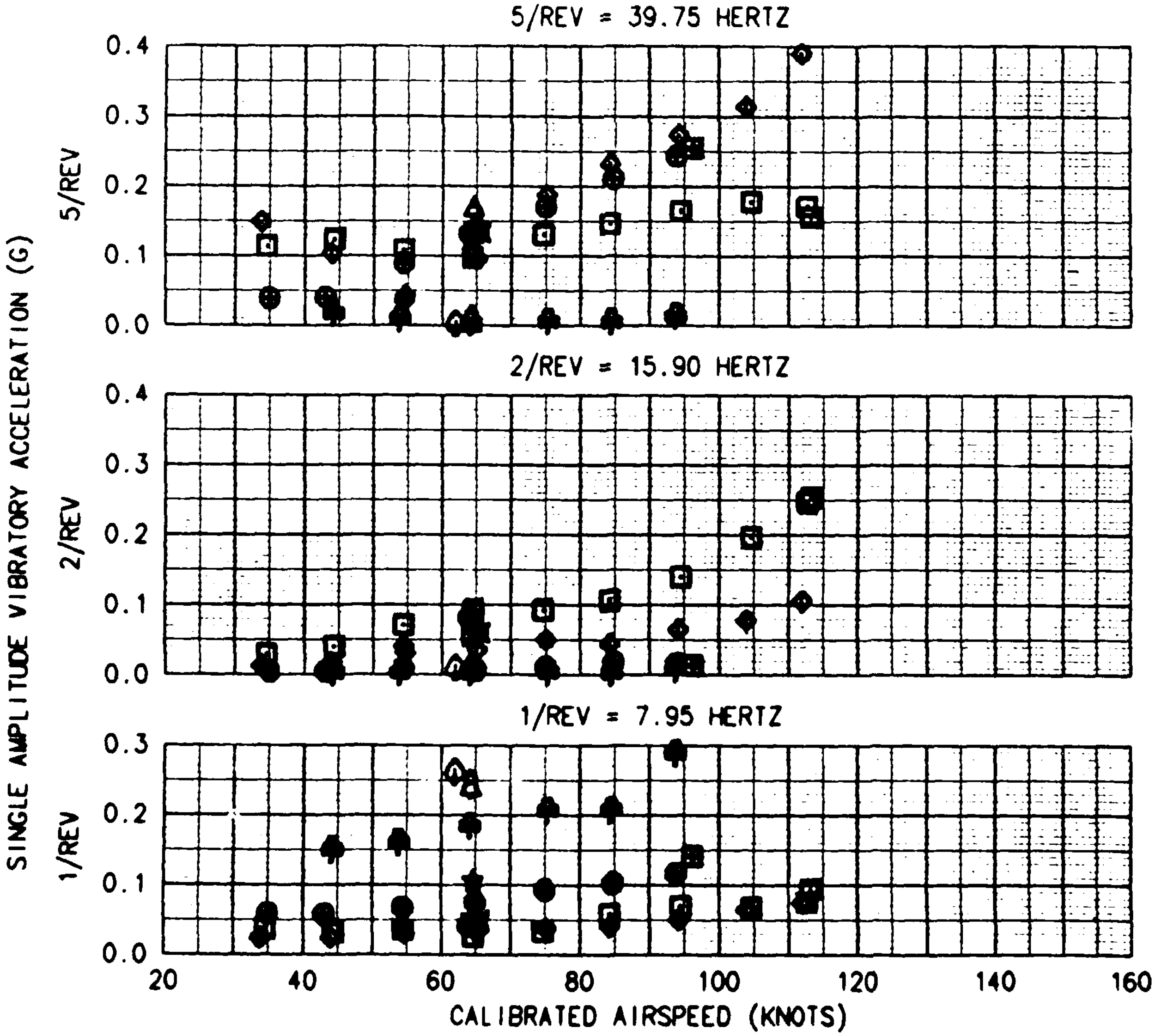


FIGURE E-169

VIBRATION CHARACTERISTICS

AH-6G USA S/N 84-24319

PLANK LEFT AFT VERTICAL ACCELEROMETER

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM FLIGHT CONDITION	CONFIGURATION
□	2990	101.1(MID)	4370	29.5	477	LVL FLT	PLANK EMPTY
○	2960	101.1(MID)	4430	28.0	477	RT TURN	
△	2960	101.1(MID)	4390	28.5	477	LT TURN	
◇	3510	100.6(MID)	5070	35.0	477	LVL FLT	PLANK, TWO 50 CAL
⊠	3170	100.9(MID)	5220	35.0	477	RT TURN	
⌑	3350	101.0(MID)	5170	35.0	477	LT TURN	
⊕	3770	100.4(MID)	4660	31.5	477	LVL FLT	PLANK, 50 CAL AND 7-SHOT ROCKET LAUNCHER
⊞	3760	100.4(MID)	4620	32.0	477	RT TURN	
☆	3760	100.4(MID)	4640	32.0	477	LT TURN	
♧	3740	100.2(MID)	5150	23.0	477	LVL FLT	PLANK, TWO 19-SHOT ROCKET LAUNCHERS
♤	3790	100.2(MID)	6110	22.5	477	RT TURN	
♙	3790	100.2(MID)	5900	23.0	477	LT TURN	

NOTE: ACCELEROMETERS WERE MOVED TO INBOARD PLANK STATIONS FOR THE 50 CAL ONLY CONFIGUATION.

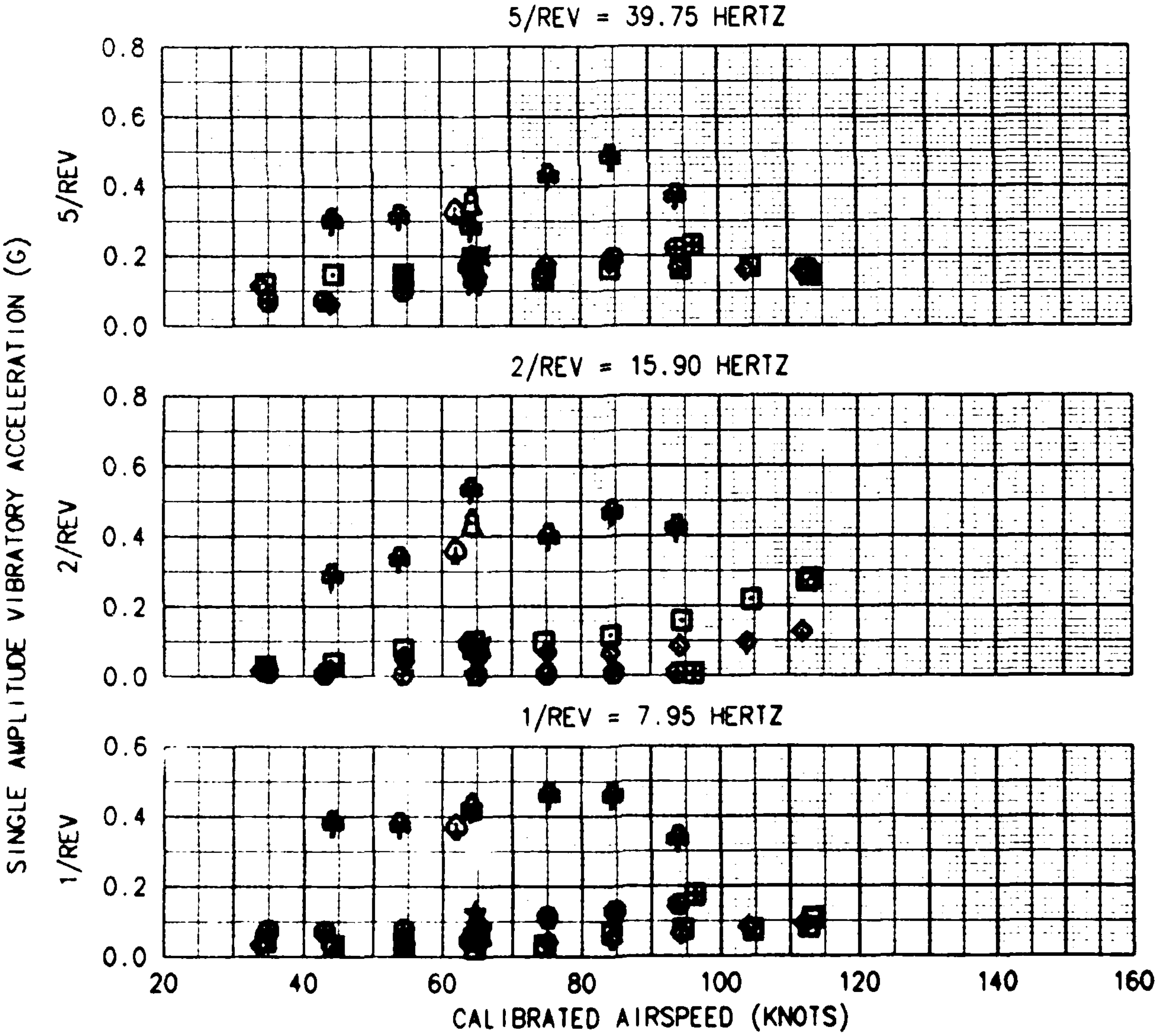


FIGURE E-170

VIBRATION CHARACTERISTICS

AH-6G USA S/N 84-24319

PLANK RIGHT AFT LONGITUDINAL ACCELEROMETER

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM FLIGHT CONDITION	CONFIGURATION
□	2990	101.1(MID)	4370	29.5	477	LVL FLT	PLANK EMPTY
○	2960	101.1(MID)	4430	28.0	477	RT TURN	
△	2960	101.1(MID)	4390	28.5	477	LT TURN	
◇	3510	100.6(MID)	5070	35.0	477	LVL FLT	PLANK, TWO 50 CAL
⊠	3170	100.9(MID)	5220	35.0	477	RT TURN	
⌑	3350	101.0(MID)	5170	35.0	477	LT TURN	
⊕	3770	100.4(MID)	4660	31.5	477	LVL FLT	PLANK, 50 CAL AND 7-SHOT ROCKET LAUNCHER
⊞	3760	100.4(MID)	4620	32.0	477	RT TURN	
☆	3760	100.4(MID)	4640	32.0	477	LT TURN	
♧	3740	100.2(MID)	5150	23.0	477	LVL FLT	PLANK, TWO 19-SHOT ROCKET LAUNCHERS
♤	3790	100.2(MID)	6110	22.5	477	RT TURN	
♙	3790	100.2(MID)	5900	23.0	477	LT TURN	

NOTE: ACCELEROMETERS WERE MOVED TO INBOARD PLANK STATIONS FOR THE 50 CAL ONLY CONFIGUATION.

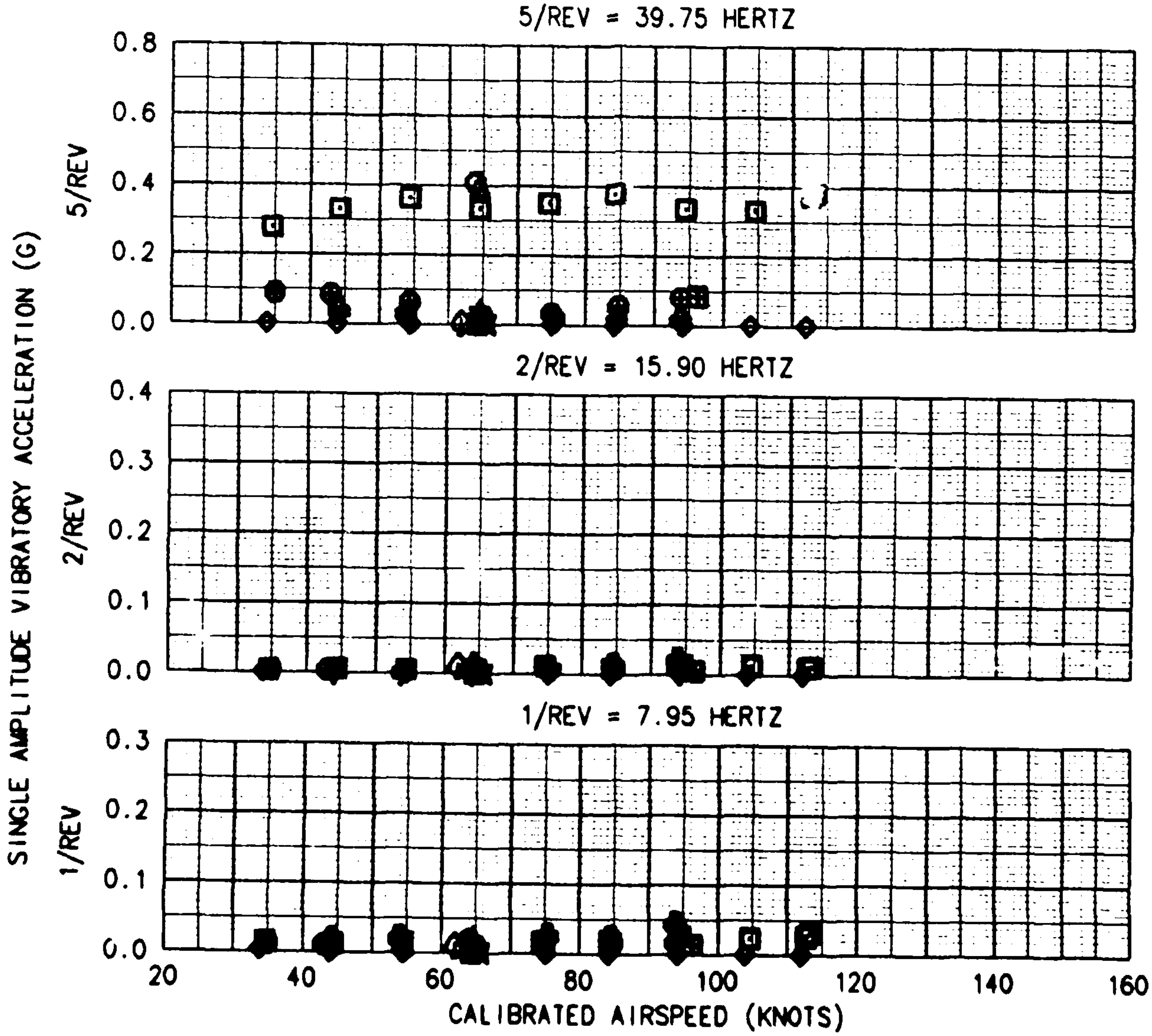


FIGURE E-171
VIBRATION CHARACTERISTICS
AH-6G USA S/N 84-24319
PLANK LEFT AFT LONGITUDINAL ACCELEROMETER

SYMBOL	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	TRIM FLIGHT CONDITION	CONFIGURATION
□	2990	101.1(MID)	4370	29.5	477	LVL FLT	PLANK EMPTY
○	2960	101.1(MID)	4430	28.0	477	RT TURN	
△	2960	101.1(MID)	4390	28.5	477	LT TURN	
◇	3510	100.6(MID)	5070	35.0	477	LVL FLT	PLANK, TWO 50 CAL
⊠	3170	100.9(MID)	5220	35.0	477	RT TURN	
⌑	3350	101.0(MID)	5170	35.0	477	LT TURN	
⊕	3770	100.4(MID)	4660	31.5	477	LVL FLT	PLANK, 50 CAL AND 7-SHOT ROCKET LAUNCHER
⊞	3760	100.4(MID)	4620	32.0	477	RT TURN	
☆	3760	100.4(MID)	4640	32.0	477	LT TURN	
♧	3740	100.2(MID)	5150	23.0	477	LVL FLT	PLANK, TWO 19-SHOT ROCKET LAUNCHERS
♤	3790	100.2(MID)	6110	22.5	477	RT TURN	
♁	3790	100.2(MID)	5900	23.0	477	LT TURN	

NOTE: ACCELEROMETERS WERE MOVED TO INBOARD PLANK STATIONS FOR THE 50 CAL ONLY CONFIGUATION.

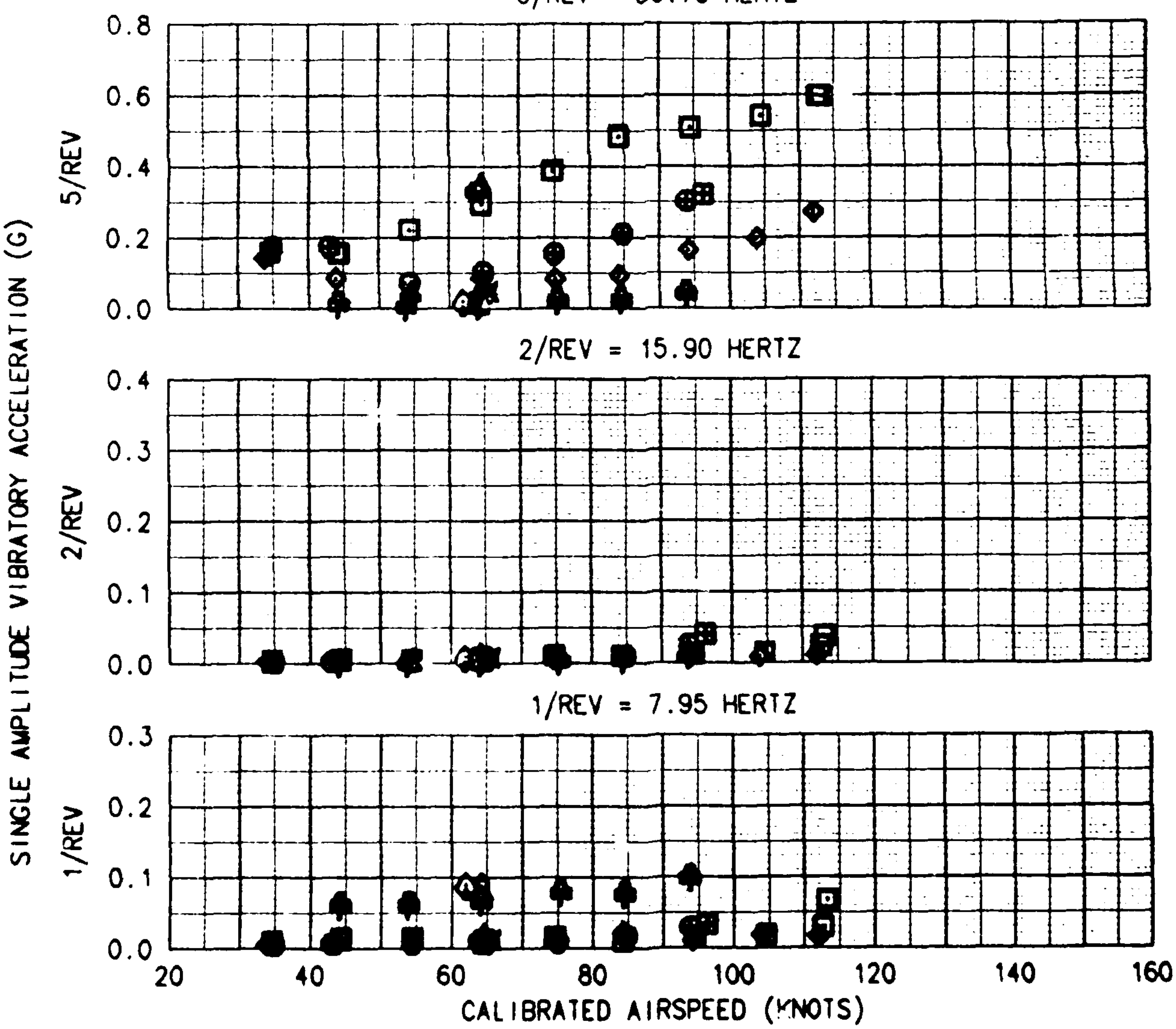


FIGURE E-172
VIBRATION CHARACTERISTICS
AH-6C USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG CALIBRATED AIRSPEED (KTS)	AIRCRAFT CONFIGURATION
3000	101.1(MID)	4410	29.0	477	44	PLANK EMPTY

NOTES: 1. LEVEL FLIGHT
2. MAIN ROTOR HARMONICS 1/REV 7.95 HZ
2/REV 15.90 HZ
5/REV 39.75 HZ
3. TAIL ROTOR HARMONICS 1/REV 47.47 HZ
2/REV 94.93 HZ

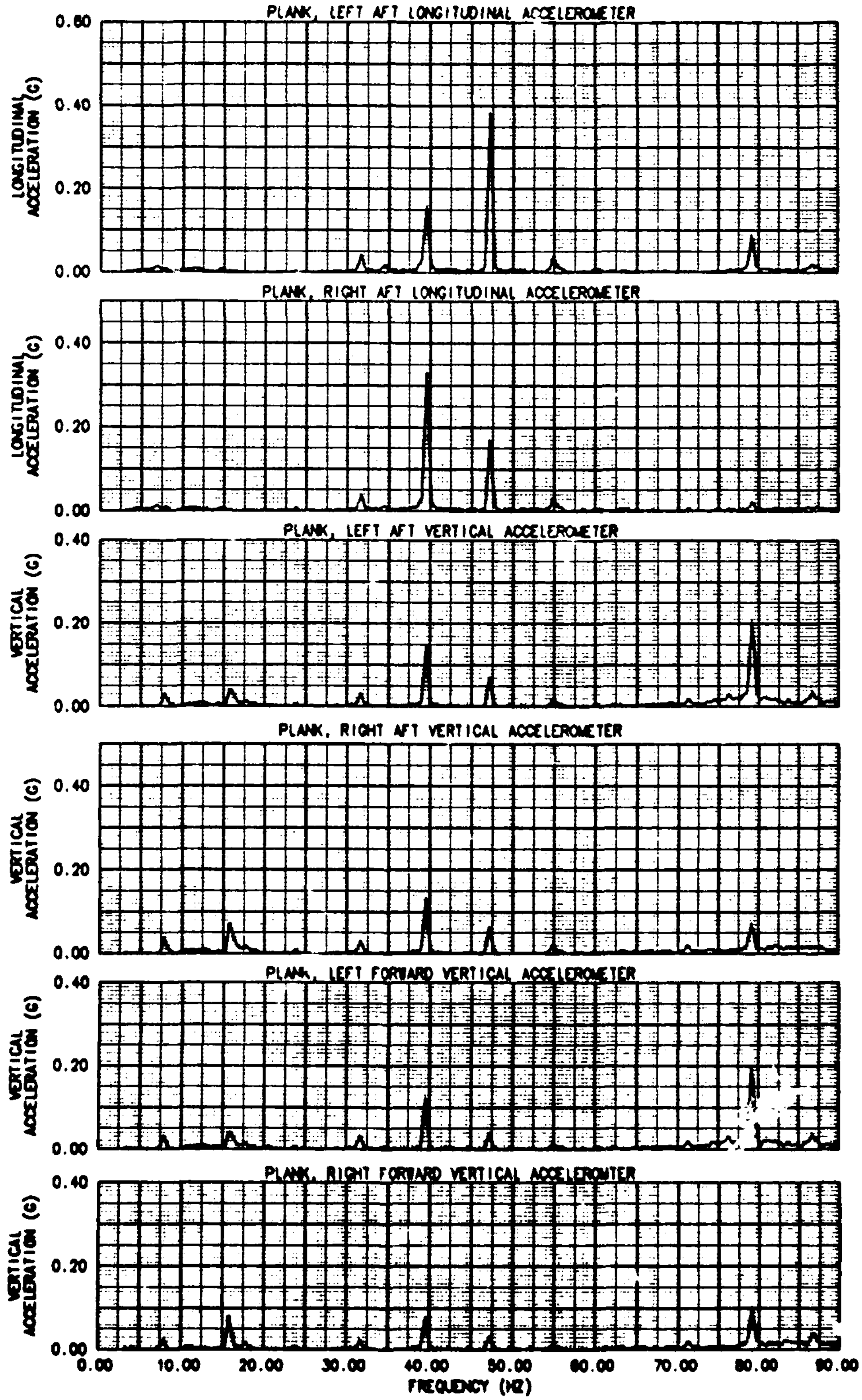


FIGURE E-173
VIBRATION CHARACTERISTICS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG CALIBRATED AIRSPEED (KTS)	AIRCRAFT CONFIGURATION
2970	101.1(MID)	4340	30.0	477	113	PLANK EMPTY

NOTES:
1. LEVEL FLIGHT
2. MAIN ROTOR HARMONICS 1/REV 7.95 HZ; 2/REV 15.90 HZ; 5/REV 39.75 HZ
3. TAIL ROTOR HARMONICS 1/REV 47.47 HZ; 2/REV 94.93 HZ

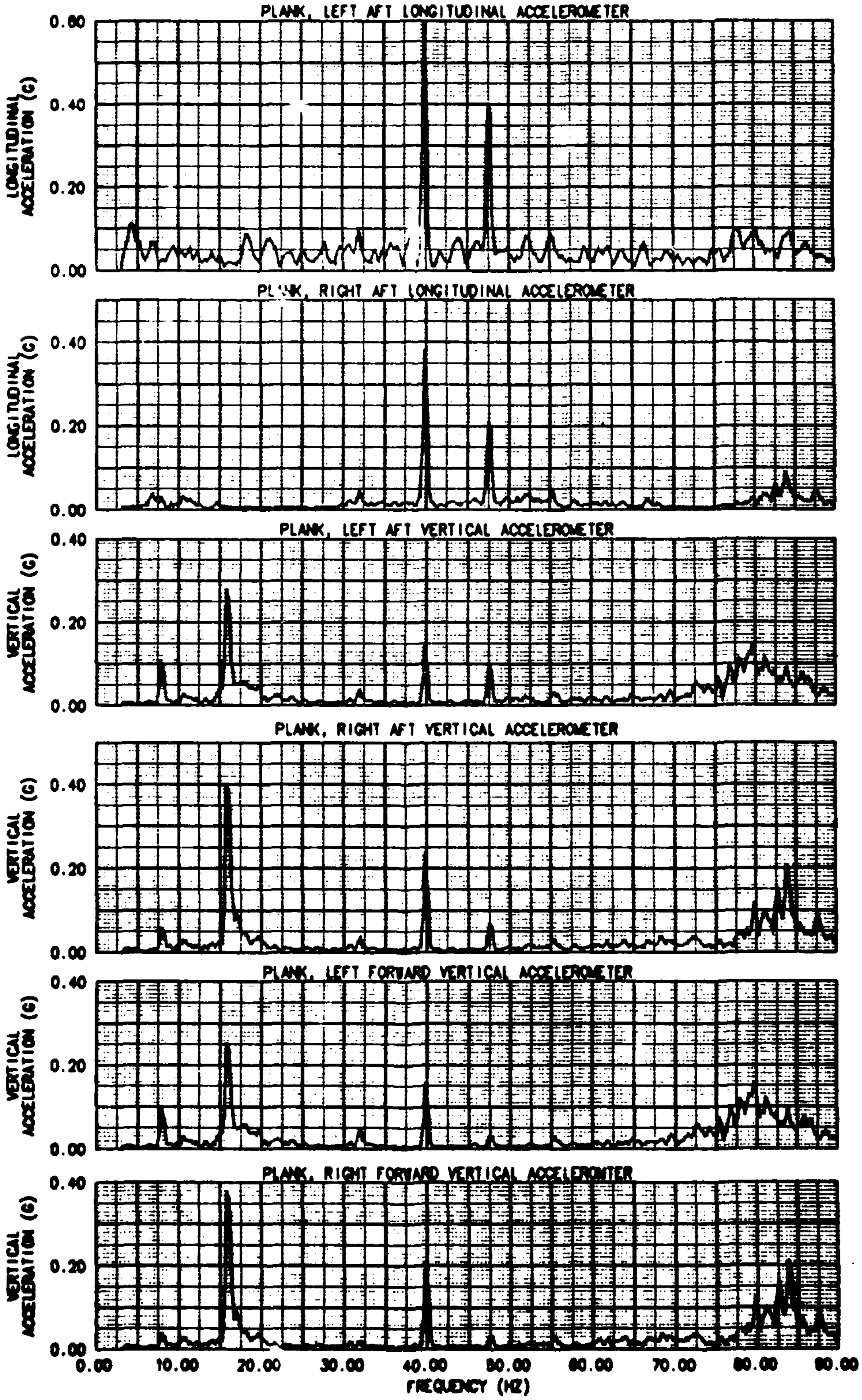


FIGURE E-174
VIBRATION CHARACTERISTICS
AH-6C USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG CALIBRATED AIRSPEED (KTS)	AIRCRAFT CONFIGURATION
3550	100.6(MID)	5060	34.0	477	44	PLANK WITH TWO 50 CAL

NOTES:
1. LEVEL FLIGHT
2. MAIN ROTOR HARMONICS 1/REV 7.95 HZ
2/REV 15.90 HZ
5/REV 39.75 HZ
3. TAIL ROTOR HARMONICS 1/REV 47.47 HZ
2/REV 94.93 HZ

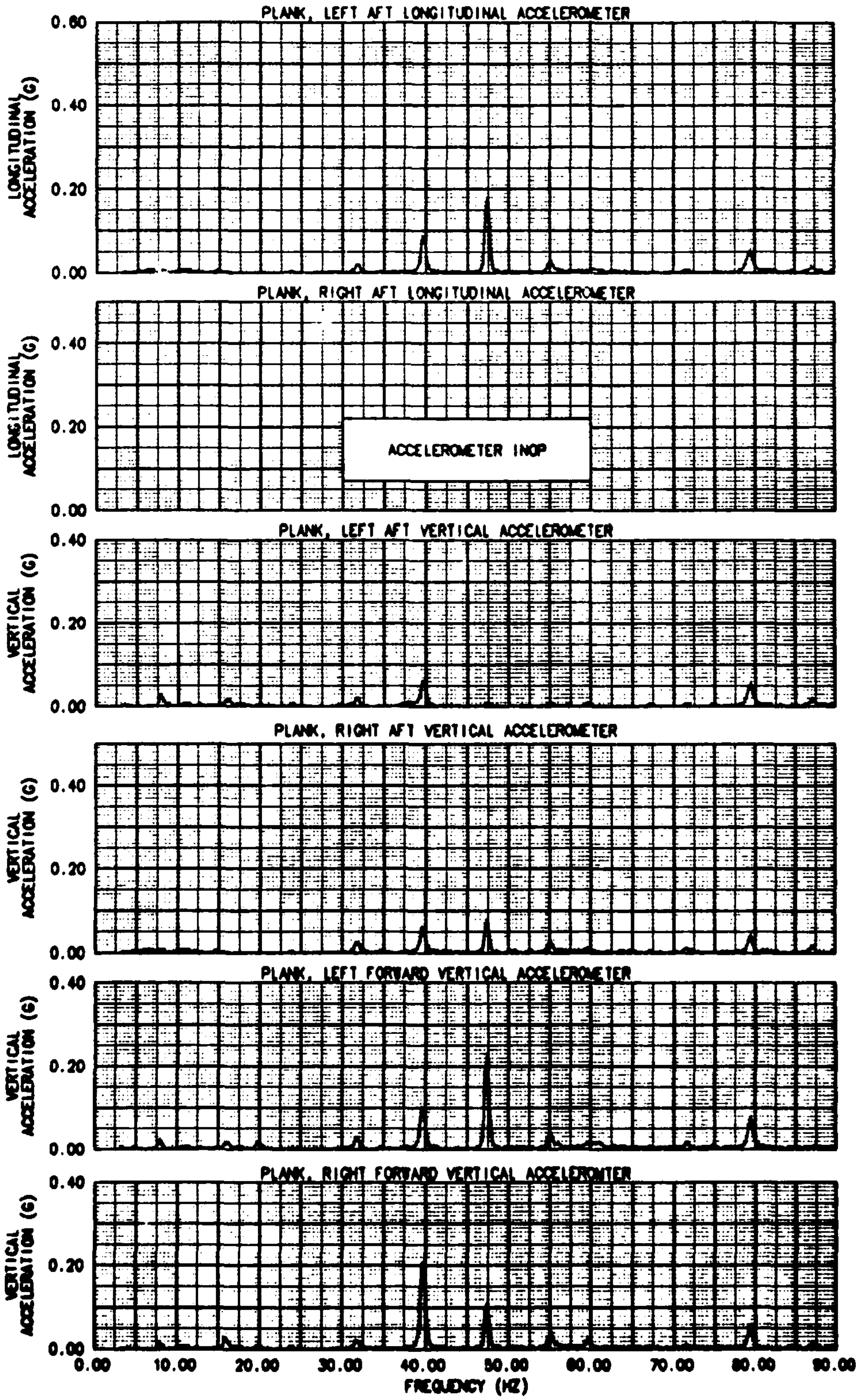


FIGURE E-175
VIBRATION CHARACTERISTICS
AH-6C USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG CALIBRATED AIRSPEED (KTS)	AIRCRAFT CONFIGURATION
3530	100.6(MID)	5070	37.0	477	112	PLANK WITH TWO 50 CAL

NOTES:
1. LEVEL FLIGHT
2. MAIN ROTOR HARMONICS 1/REV 7.96 HZ; 2/REV 15.90 HZ; 5/REV 39.75 HZ
3. TAIL ROTOR HARMONICS 1/REV 47.47 HZ; 2/REV 94.93 HZ

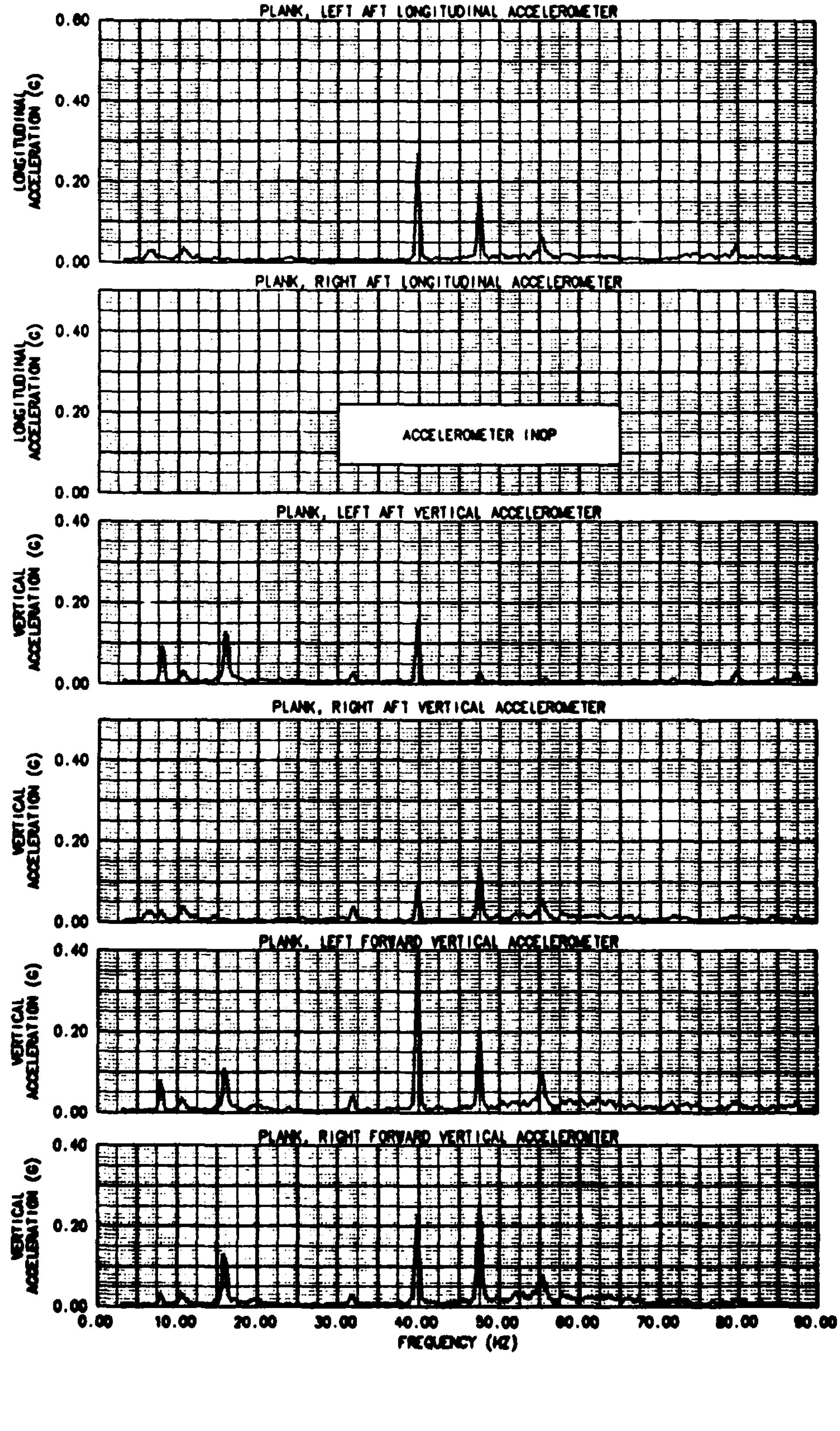


FIGURE E-176
VIBRATION CHARACTERISTICS
AH-6C USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG CALIBRATED AIRSPEED (KTS)	AIRCRAFT CONFIGURATION
3780	100.4(MID)	4620	31.0	477	43	PLANK WITH 50 CAL AND 7-SHOT ROCKET LAUNCHER

NOTES:
1. LEVEL FLIGHT
2. MAIN ROTOR HARMONICS 1/REV 7.95 HZ, 2/REV 15.90 HZ, 5/REV 39.75 HZ
3. TAIL ROTOR HARMONICS 1/REV 47.47 HZ, 2/REV 94.93 HZ

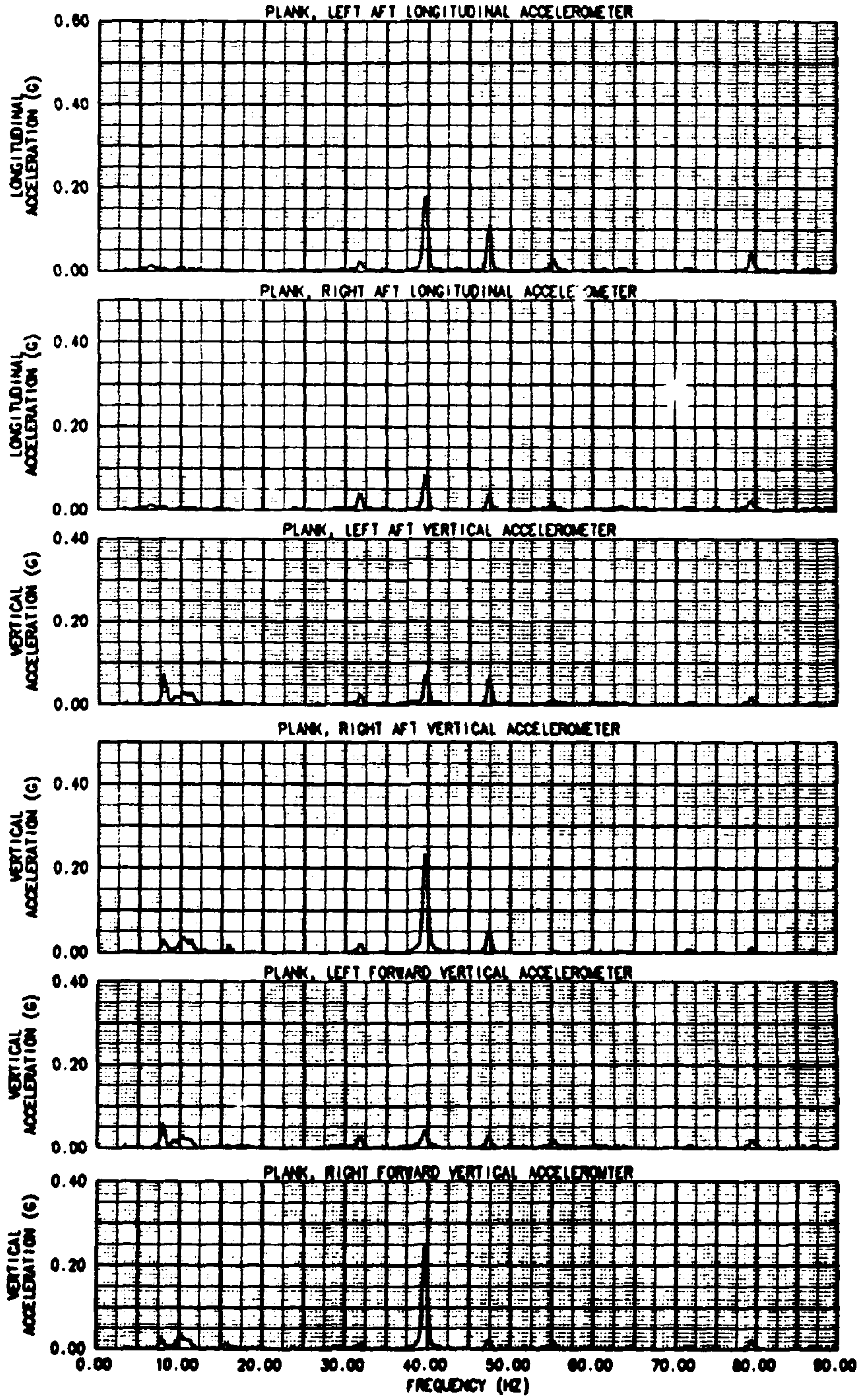


FIGURE E-177
VIBRATION CHARACTERISTICS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG CALIBRATED AIRSPEED (KTS)	AIRCRAFT CONFIGURATION
3780	100.4(MID)	4570	32.0	477	94	PLANK WITH 50 CAL AND 7-SHOT ROCKET LAUNCHER

NOTES:
1. LEVEL FLIGHT
2. MAIN ROTOR HARMONICS 1/REV 7.95 HZ
   2/REV 15.90 HZ
   5/REV 39.75 HZ
3. TAIL ROTOR HARMONICS 1/REV 47.47 HZ
   2/REV 94.93 HZ

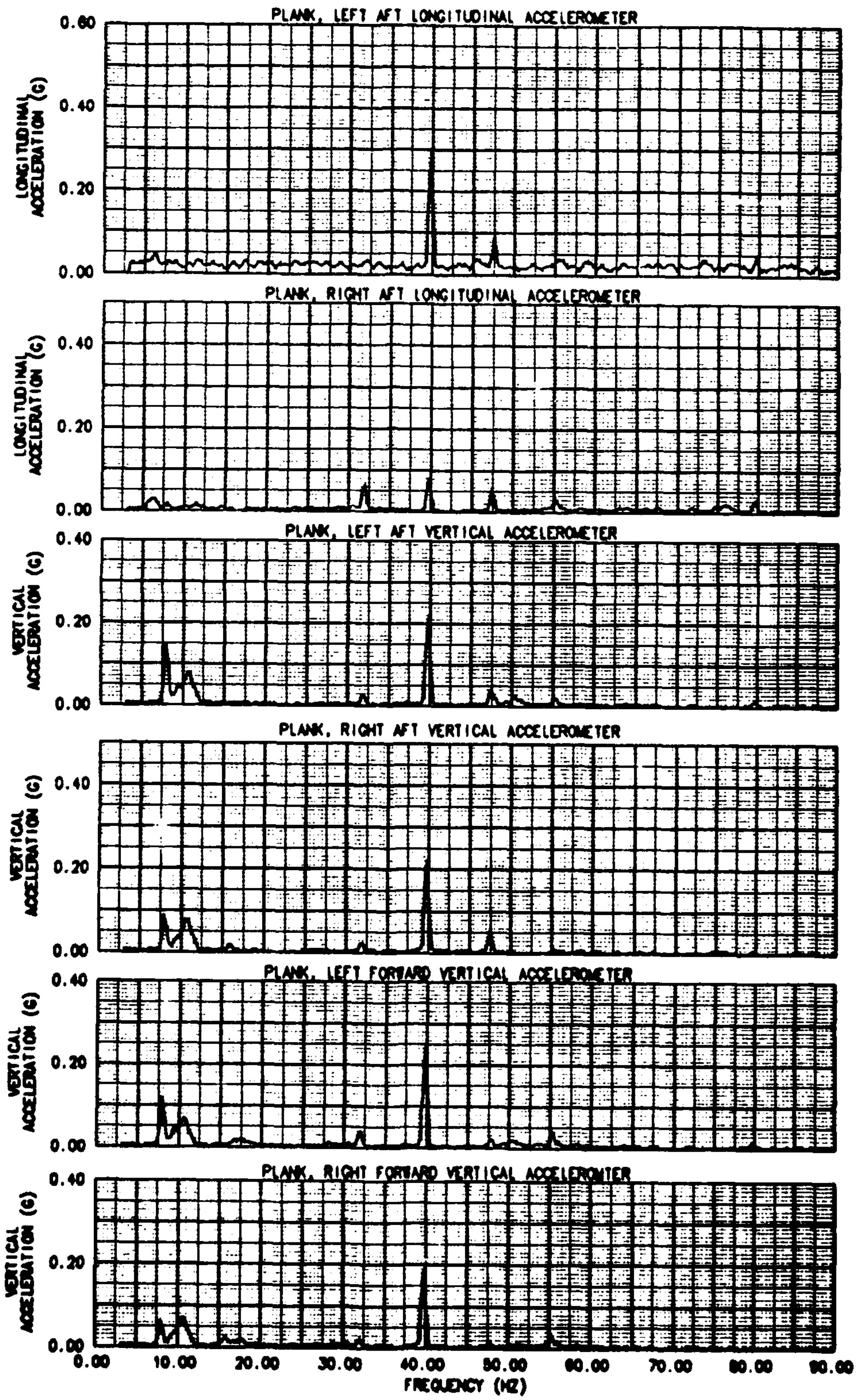


FIGURE E-178

VIBRATION CHARACTERISTICS

AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG CALIBRATED AIRSPEED (KTS)	AIRCRAFT CONFIGURATION
3750	100.2(MID)	5330	23.0	477	44	PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS

NOTES: 1. LEVEL FLIGHT
2. MAIN ROTOR HARMONICS 1/REV 7.95 HZ, 2/REV 15.90 HZ, 5/REV 39.75 HZ
3. TAIL ROTOR HARMONICS 1/REV 47.47 HZ, 2/REV 94.93 HZ

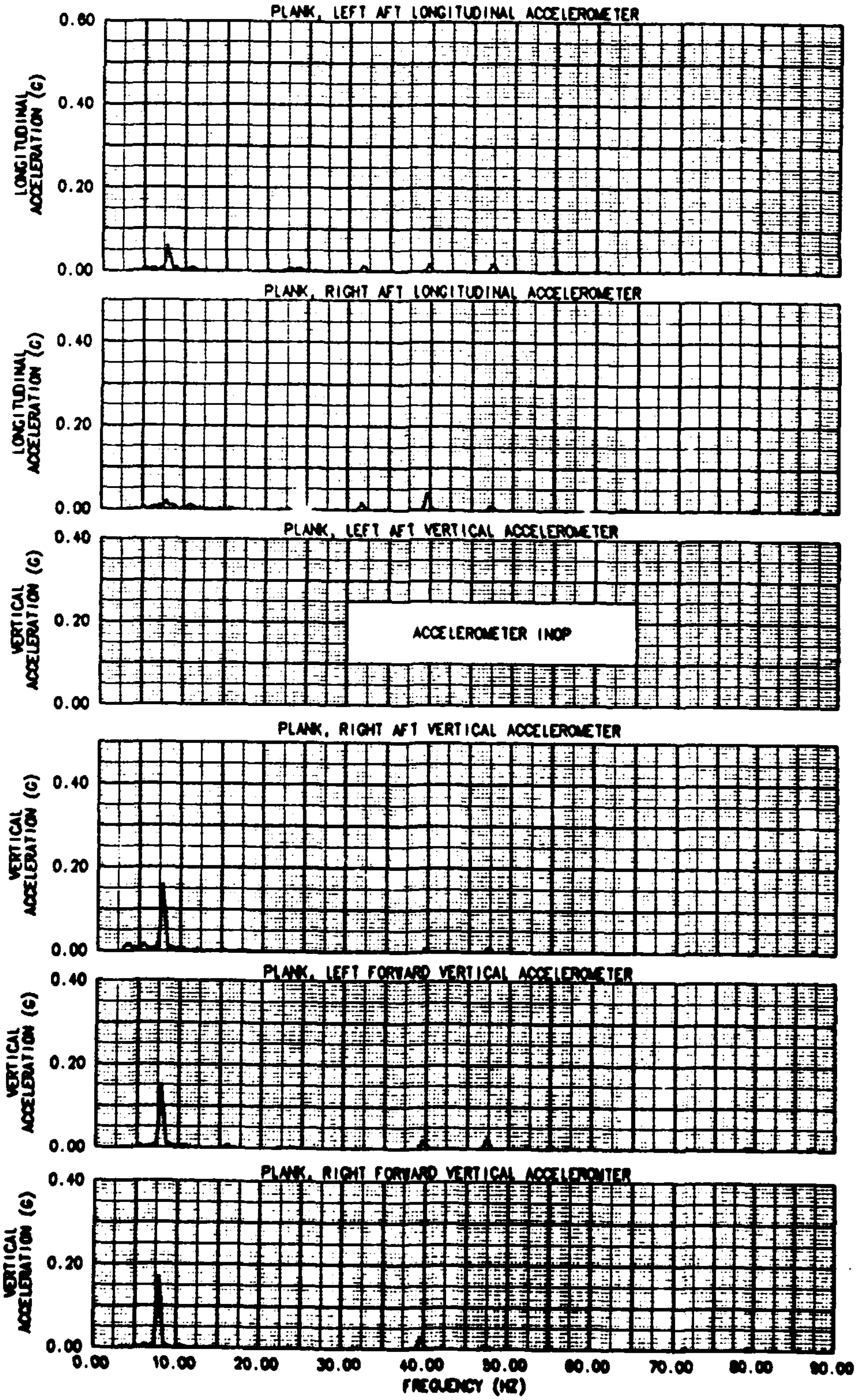


FIGURE E-179
VIBRATION CHARACTERISTICS
AH-6G USA S/N 84-24319

AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	AVG CALIBRATED AIRSPEED (KTS)	AIRCRAFT CONFIGURATION
3730	100.2(MID)	4820	23.0	477	94	PLANK WITH TWO 19-SHOT ROCKET LAUNCHERS

NOTES: 1. LEVEL FLIGHT
2. MAIN ROTOR HARMONICS 1/REV 7.95 HZ
2/REV 15.90 HZ
5/REV 39.75 HZ
3. TAIL ROTOR HARMONICS 1/REV 47.47 HZ
2/REV 94.93 HZ

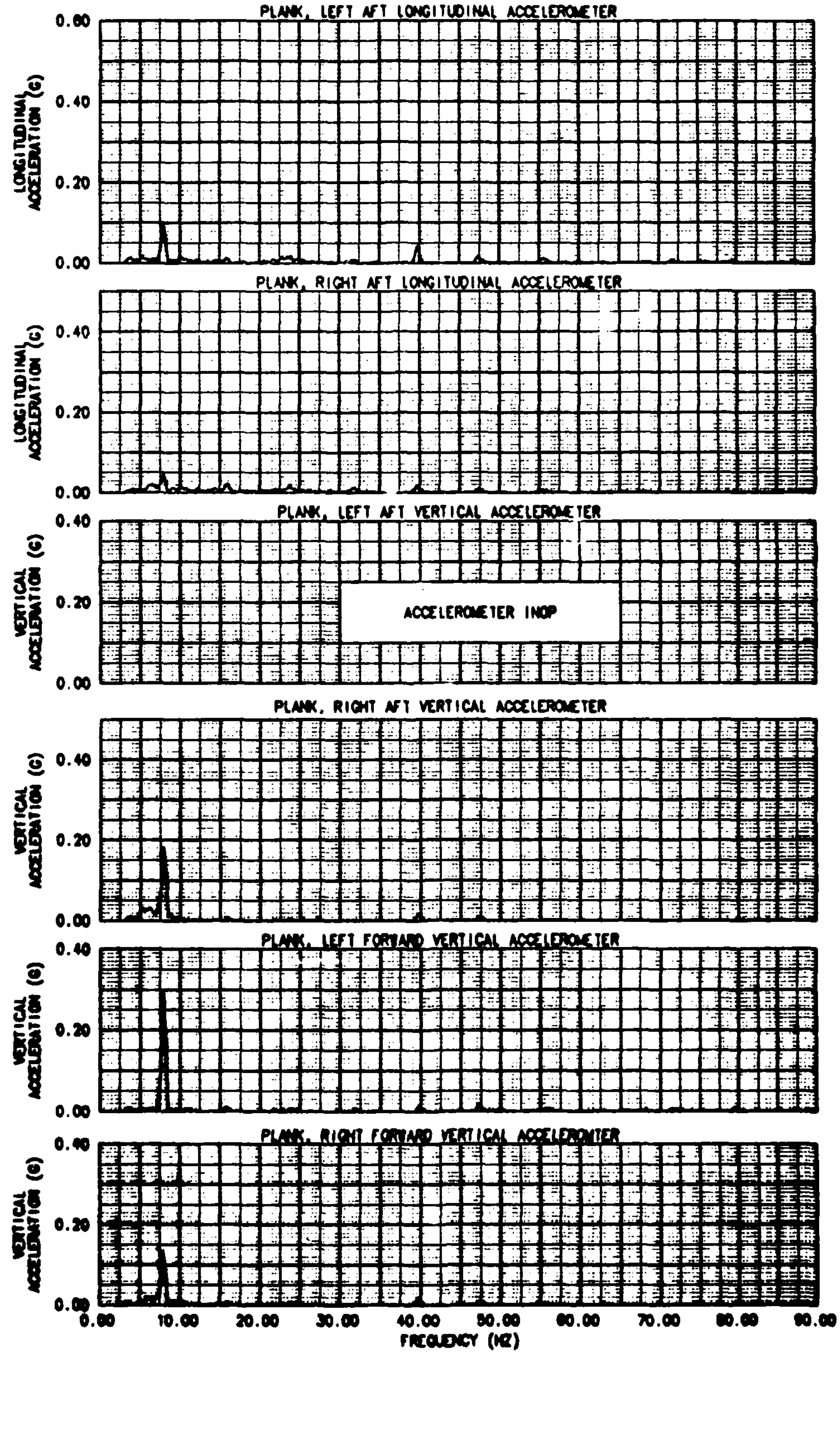


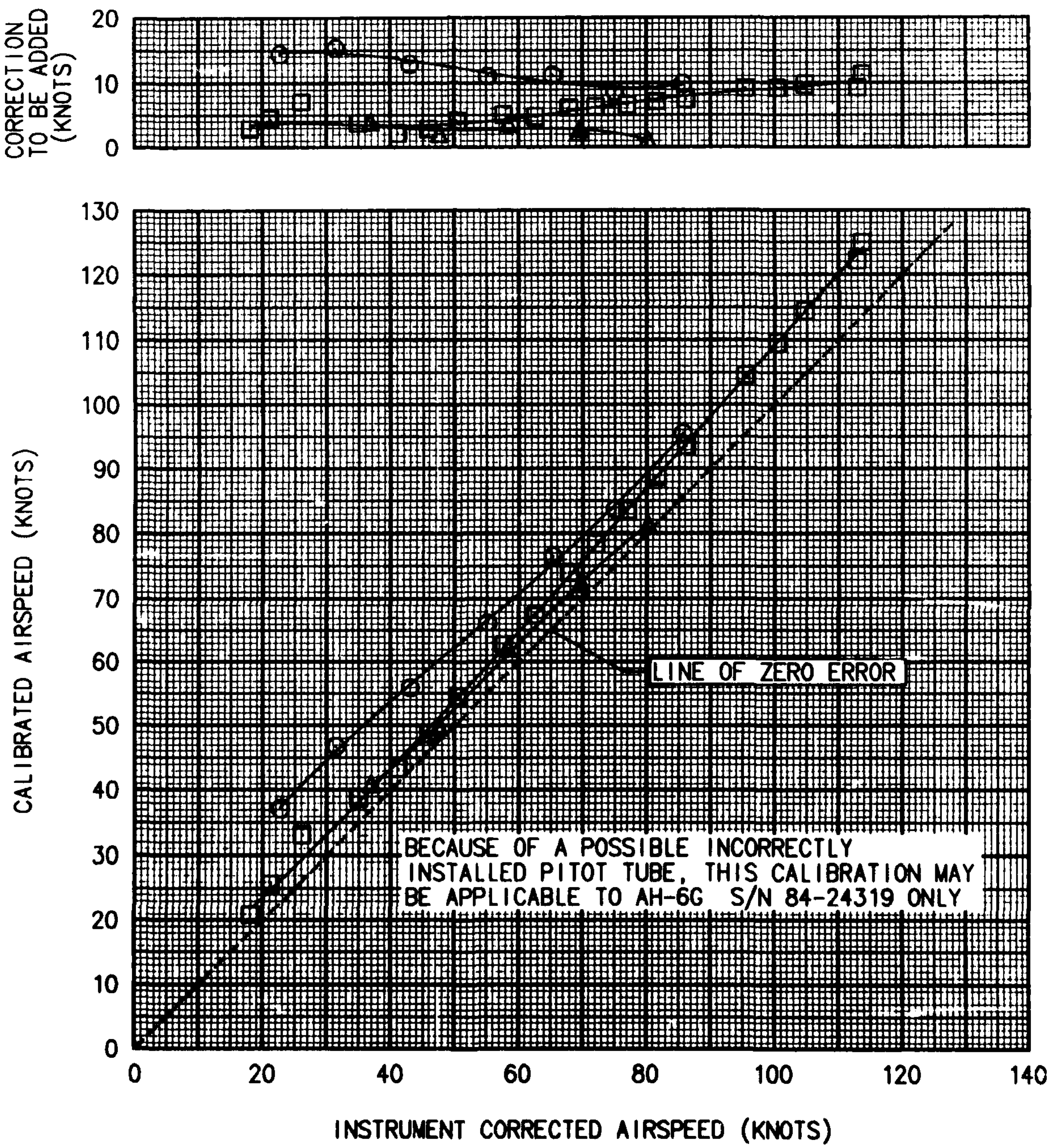
FIGURE E-180

SHIP AIRSPEED CALIBRATION

AH-6G USA S/N 84-24319

SYM	AVG GROSS WEIGHT (LB)	AVG LONGITUDINAL CG LOCATION (FS)	AVG DENSITY ALTITUDE (FT)	AVG OAT (DEG C)	AVG ROTOR SPEED (RPM)	FLIGHT CONDITION
□	2940	102.4 (MID)	7180	20.8	477	LEVEL
○	2810	101.7 (MID)	7910	19.2	477	CLIMB
△	2740	101.7 (MID)	7380	19.6	477	AUTO DESCENT

NOTES: 1) TRAILING BOMB METHOD
2) EPS EMPTY CONFIGURATION



APPENDIX F. CLASSIFIED CONFIGURATIONS

Appendix F. (Classified)

to Final Report

for

AEFA Project No. 86-15

This appendix is classified. Anyone with a need to see it should contact the U.S. Army Aviation Systems Command, ATTN: AMSAV-8, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798. Commercial (314) 263-1333, Autovon 693-1333.

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